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5) Take a Note of it!

Whatever your travel
problem ----- short journey
or long trek ---- rail, road
sea or air ...

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You'll save not only
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Places and Products

II. Loughborough Bells

by A. K. HAMILTON JENKIN

To the ancient English art of bell-ringing belongs an ancient craft—that of the bell-founder. 'Round both the shires they ring them . . . a happy noise to hear': Leicestershire can claim that she makes them too, and in many a far-off land the sound of Loughborough bells bears with it an echo of the English countryside, 'an holy and a cheerful note'. Long may the men of English stock overseas continue to feel the need of hearing that note, and to support a noble industry by buying its bells

No sound is more characteristic of rural England than that of church bells heard across the quiet countryside. To the campanologist England has long been known as the 'Ringing Isle', and today its 40,000 ringers still bear witness to the popularity of this peculiarly English art.

Change-ringing had its inception in England during approximately the same period that saw the rise of the carillon in the Low Countries. By 1637 the 'science', as its followers affectionately call it, was firmly established and in that year a ringers' society called the 'Ancient Society of College Youths' was founded in London. This community still flourishes and now, in combination with the other great metropolitan society—the 'Cumberland Youths'—includes in its membership most of the leading change-ringers of Britain. But before there were ringers there must have been bells, and who were the makers of those noble peals which,

Sweetly tolling, men do call
To taste of meat to feed the soul

as an old inscription words it?

It is fairly certain that the earliest bell-founders were monks. These were followed by itinerant craftsmen who travelled the countryside setting up temporary foundries wherever new bells were needed or old ones required repair. Owing to poor roads and the consequent difficulty of transporting heavy castings, this method continued in some cases until almost the beginning of the 19th century.

From the Middle Ages onwards, however, permanent bell-foundries were also to be found in various parts of the country. Unlike most ancient industries bell-founding had no special ties, such as proximity to water-power, timber or coal, to bind it to any particular locality. Wherever a permanent foundry became established it was generally on a site adjoining the bell-founder's home.

A LONG TRADITION

Such was the case with the firm of John Taylor & Co. of Loughborough, today the oldest and probably the best known of the three existing bell-founding establishments of England. This ancient firm traces its ancestry to a certain Johannes de Stafford who in the year 1360 set up a bell-foundry in Leicester. For 400 years the work was carried on here under different ownerships until at length, in 1780, Robert Taylor, an apprentice to the previous owner, succeeded to the business. From that time until the present day, the art of bell-founding has been handed down through succeeding generations of the Taylor family who, since 1839, have been established in the neighbouring town of Loughborough.

Today the Taylor foundry, under the management of Mr Edmund Denison Taylor, has a name which is known throughout the civilized world, and to Loughborough come campanologists from all quarters seeking the most perfect instruments of their art.



Humphrey Spender

The firm of John Taylor and Co. of Loughborough is the oldest bell-founding establishment in England. Finished bells in the foundry: that on the left hangs ready for a final test, suspended, as it will be in the belfry, from its cast-iron 'head-stock'

Among the many notable achievements of the firm was the casting of 'Great Paul', —the largest bell in the British Empire—which now hangs in the South Tower of the West Front of St Paul's Cathedral. Made in November 1881 and weighing over 16½ tons, it was taken to London by road on a heavy framework drawn by a traction engine. The journey of 107 miles took ten days, the bell being housed away from the road at night. At one point on the journey, the waggon sank so deep in the soft ground of a field that a score of heavy cart horses were required to assist the engine in drawing it back onto the road.

The Loughborough foundry stands in a back street of smoke-darkened houses and has little in its setting or outward appearance to suggest its world-wide fame.

One's first impression upon entering the building is the comparative silence. The roar of machinery, the clanging and hammering associated with an ordinary

engineering works is absent here. Only from time to time the deep resounding tones of a bell whose 'voice' is being tried out in the adjoining tuning-shop serves to remind the visitor of the nature of the firm's products.

After the specifications of a bell have been worked out on paper, the foundryman's first task is the preparation of the moulds. These resemble two gigantic thimbles, designed to fit one over the top of the other, with sufficient space between to receive the hot metal required for the formation of the bell. The inner thimble, known as the 'core', consists of a cone of bricks over which is slowly laid on by hand a thick coating of loam, the latter a substance formed of various adhesive materials including horse dung. Through the centre of the core rises a vertical iron rod fixed to the foundry floor and to this is attached a movable sweep or 'strickle board' which is moved around the surface of the loam to smooth it to the required shape. The



Humphrey Spender

(Above) The inner mould or 'core' of bricks covered with loam and smoothed with a 'strickle board'.

(Left) The outer mould or 'cope', an iron cone lined with loam and similarly smoothed into shape

By courtesy of John Taylor & Co.



By courtesy of John Taylor & Co.

(Right) The cope—perforated to allow the escape of gases through the loam—is lowered over the core



outer mould or 'cope' is formed by lining the inner surface of a large perforated iron cone with the necessary thickness of loam and similarly sweeping the surface smooth with a strickle board.

These are the first or rough coats. The moulds are then placed in a brick oven, as large as an ordinary room, to be dried. This process may take from one or two days to as much as several weeks in the case of very large moulds. After drying, the moulds are brought out and coated a second time with a finer mixture of loam. At this stage any inscriptions required for the bell are imprinted on the inner surface of the cope by means of lead stamps. The moulds are then blacked and their surfaces 'sleeked' to ensure the castings coming out clean and smooth, after which they are returned to the ovens.



Humphrey Spender

Before tapping the furnace, a member of the staff tests the temperature of the metal with an instrument known as a 'pyrometer'

When at length they are ready, the outer mould is raised by a crane and carefully lowered over the inner core, to the base-plate of which it is securely bolted. For convenience in pouring the hot metal, large moulds are sunk in pits which brings their tops nearly on a level with the foundry floor. Around them in these pits as much as forty tons of sand may have to be packed in order to ensure the slow and even cooling of the bells which are to be.

The moment for casting has now come. Jim Smith, the foundry foreman, is in charge of the operations. A fine old craftsman, he assisted as a boy in the casting of 'Great Paul' and has worked in this foundry for over fifty years since. It is probably true to say that he has made more bells than any man alive. Along one wall of the foundry the furnaces are ready to discharge the liquid bell-metal, an alloy composed of four parts copper to one of tin. The temperature having been carefully tested by a recorder, the signal is given to tap the furnaces. First in a tiny trickle, then a steady stream, the white-hot metal hisses and spits as it flows along the channel and into the cauldron which stands ready to receive it. Puffs of bluish-black smoke ascend towards the roof of the foundry and settle in a fine dust.

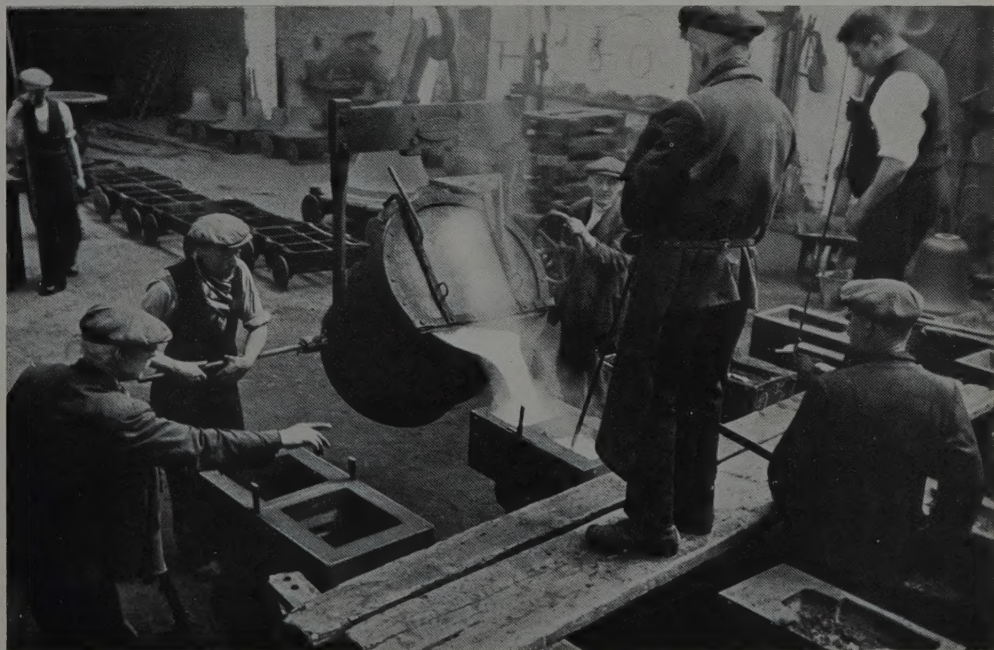
AN EXCITING MOMENT

As soon as the cauldron is filled, it is conveyed by an overhead crane to a point where it hangs suspended over the row of iron boxes which serve as funnels to the moulds. The feeling of excitement at this moment is scarcely less tense today than in the past. Frequently the men have been at work all through the previous night, for once the process has reached this stage it must go forward without interruption. Little of the excitement which is felt, however, appears in the demeanour of the men. Scarcely a word is spoken as 'Old Jim' with a nod or motion of the hand directs the assistant workmen and the man in charge of the crane. Silently the great



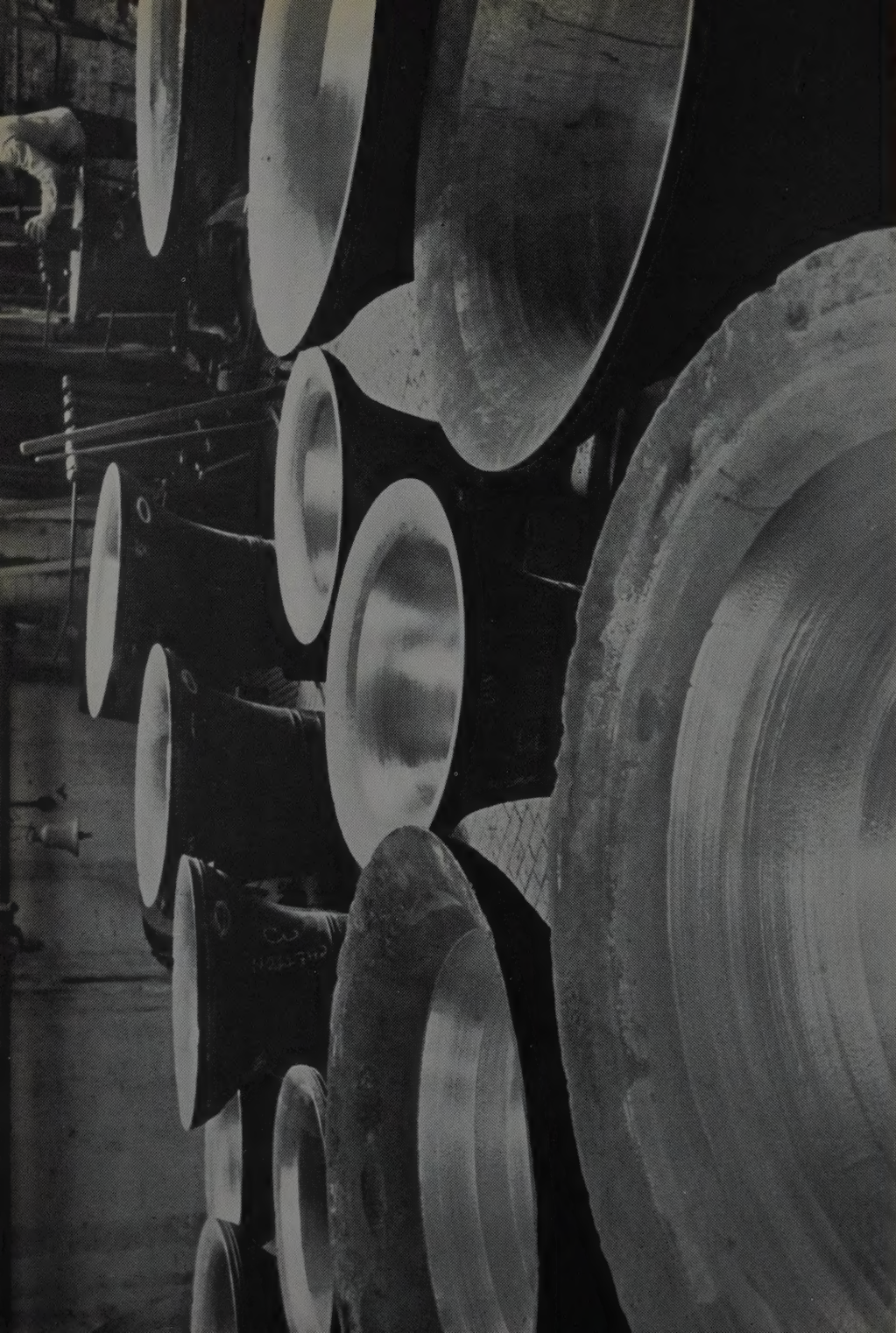
Humphrey Spender

As the furnace is tapped the metal flows in a white-hot stream along the channel into the cauldron



Humphrey Spender

Suspended from an overhead crane, the cauldron is tipped over by hand into the iron boxes which serve as funnels to the moulds, sunk in sand-pits below the foundry floor



Tuning the bells. On the right a workman is paring off sections of the inner surface as the bell revolves

cauldron tips over and the liquid metal flows into the waiting moulds. Often when the bells of Roman Catholic churches are being founded the priests are present, and the act of pouring is accompanied by the singing of the *Ave Maria*.

The crucial period for the foundry foreman is not over until the casting has entirely cooled. This may take from 24 hours to as much as a week, or even more in the case of the largest bells. The air of expectancy with which a bell is first sounded after being released from the moulds has given rise to a French saying: 'as astonished as a bell-founder'. In olden times, when unqualified success probably caused more astonishment than it does today, it was customary to 'baptize' the casting with a content of liquid refreshment which was subsequently drunk to celebrate the event.

THE TUNER'S DELICATE TASK

To cast a bell in perfect unison would be almost as impossible as to cast the parts of a complicated machine and expect it to require no further adjustment. From the foundry, therefore, the bell is passed to the tuning-shop where the tuner tests its tone by comparison with a formidable array of tuning-forks. This is a most delicate and skilled operation since every bell has five separate and distinct tones—the Strike tone, the Nominal (an octave above), the Hum tone (an octave below), the Tierce (a minor third) and the Quint (a perfect fifth). Not only must each bell in a chime or carillon be in tune with the others: each of its five tones must be listened for and attuned to exact pitch.

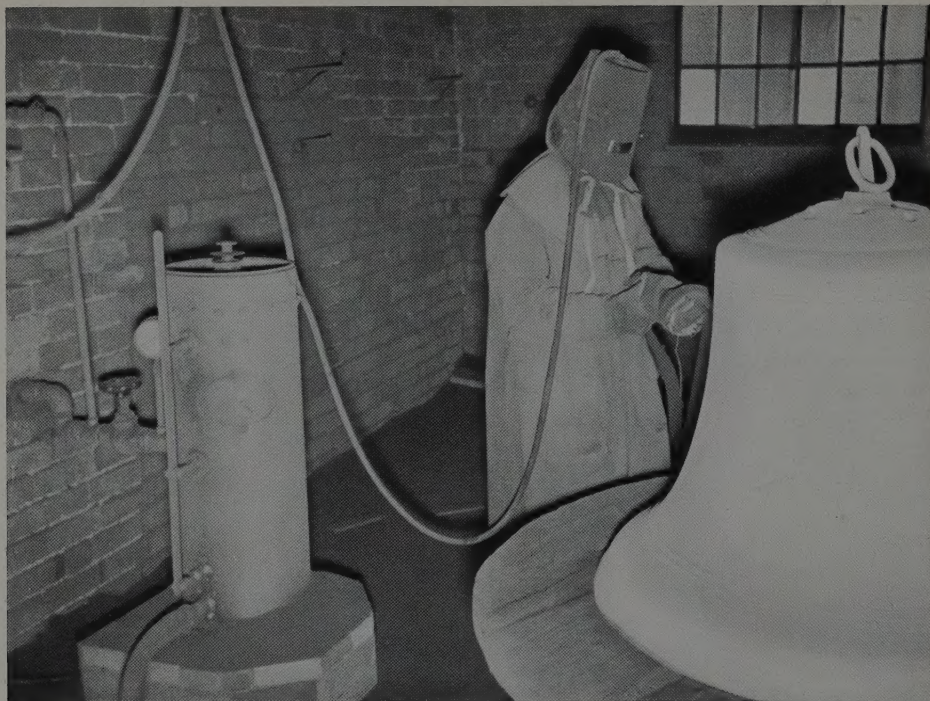
To this end the bell is clamped mouth upwards on a revolving plate which is then set in rotation, whilst a vertical cutting-bit pares off sections of the inner surface which have previously been indicated by the tuner. Slowly the work proceeds until at length, perhaps after weeks of labour, the tones of the bell are adjudged to be in perfect unison.

Finally when the bell has been passed by the tuner it is handed over to the sand-blaster. Clothed in a protective suit, helmeted and goggled, he applies a charge of dry shot under high pressure against the surface of the metal. From this operation the bell emerges at last burnished and shining, a thing of beauty now to the eye no less than the ear. For the sand-blaster, however, the job is an exacting one and fifteen minutes is as long as this work can be sustained at a time.

The Taylor foundry not only specialises in making new bells but is also a hospital to which old bells are sent from all over the country for tuning and repair. Some are so 'sick' that they can only be broken down, remelted and cast again. Others may be patched up by welding, whilst their clappers, frames and headstocks are adjusted or renewed. Apart from welding, which is done by specialist firms, the whole of this work is carried out on the premises. The iron frames in which the bells are hung are cast in the foundry, expert smiths are employed in making the clappers, whilst in the joiner's shop are made the wooden wheels which are used for swinging the bells. Added to this, a small tower situated in the foundry contains a set of bells, properly hung for change-ringing, which is available for the use of visiting teams of bellringers.

CARILLONS: A MODERN VENTURE

Important as the production of ringing-bells still is, this constitutes today only a part of the business of the firm. Towards the end of the last century the attention of the then partners was drawn to the subject of carillons, the manufacture of which had hitherto been practically confined to Holland and Belgium. A carillon, it should perhaps be explained, is a set of bells tuned to the notes of the chromatic scale, upon which music in two or more parts can be played. It differs wholly from change-ringing in that the bells, instead of being swung, are suspended stationary



Humphrey Spender

After tuning, the bells are 'sand-blasted'. The sand-blaster works in a sealed room wearing a leather-fibre suit and a helmet like a diver's into which air is pumped. By this operation, which is a very exacting one, the bells are burnished till their surface shines like gold

and are played by means of a clavier connected with the clappers. As the number of bells in a carillon may extend to fifty, or even more, it will be seen that the work of tuning and harmonizing them requires even greater skill than that of producing a ringing peal. The old founders of the Low Countries, indeed, claimed that this could only be done through certain secrets of which they were the sole possessors. Today it is realized that meticulous attention to detail is the chief, if not the only 'secret' of the carillon maker's art, and probably accounts for more of the success which has attended the Loughborough firm than all the jealously guarded formulae of the past.

To show how far this was the case

Messrs Taylor & Co. in 1904 installed in a tower on their works a chromatic scale of thirty-seven bells of which the largest weighs just over 6 cwt. and the smallest 10 lb. So perfect is this instrument in tone and tune that it has been acclaimed by experts as a 'veritable triumph of the founder's art' and has demonstrated conclusively that carillons can be produced in this country equal, if not superior to the very finest of those on the Continent.

The carillonneur plays the bells of his instrument by means of a clavier constructed on somewhat the same principle as that of the manuals and pedals of an organ. In this case the manuals are of wood, round in shape and three-quarters of an inch in diameter. There are two

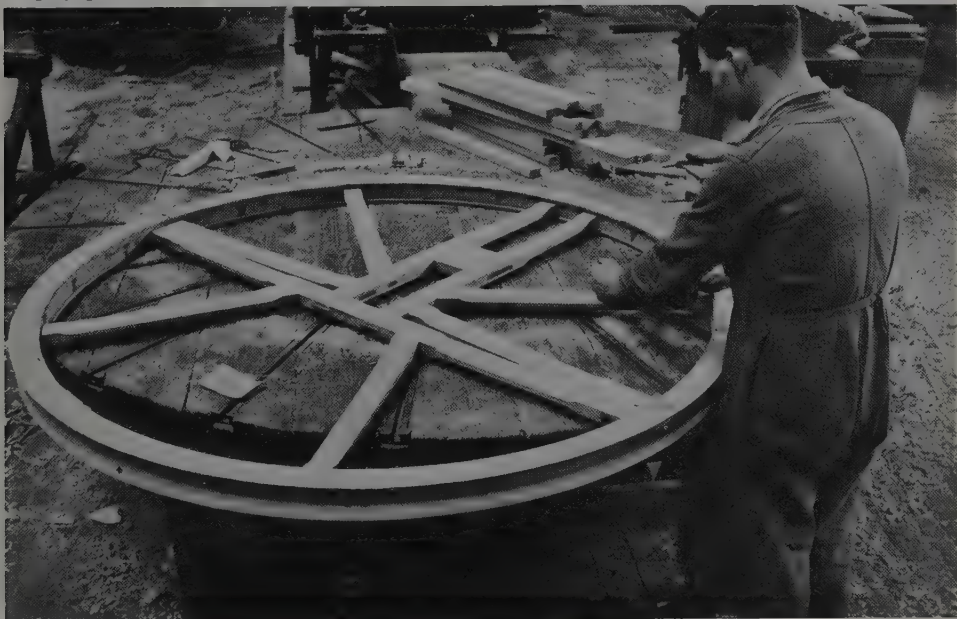
Expert smiths are employed in making the wrought-iron clappers for the bells. A partly formed clapper on the anvil

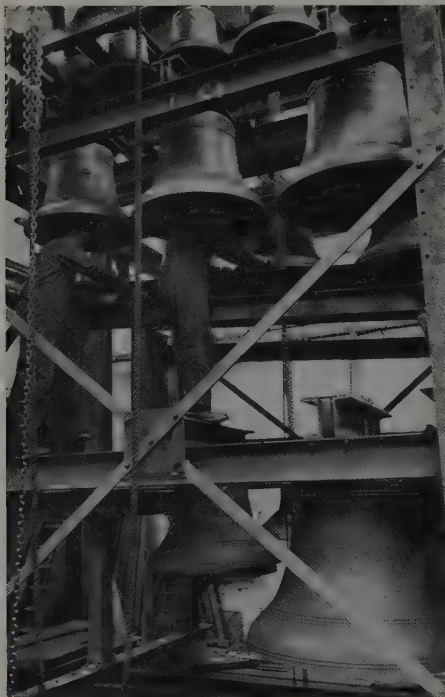


In the joiners' shop are made the wooden wheels by which the bells are swung. Spokes are of oak and rims of elm

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Humphrey Spender

Carillons of fifty bells and more are now comparatively common. In every case those made at Loughborough are assembled in their frames for testing before they leave the foundry

rows, the upper $4\frac{1}{2}$ inches above the lower. The upper represents the 'black notes' of an organ or piano and projects $3\frac{3}{4}$ inches, whilst the lower represents the 'white notes' and projects $6\frac{1}{4}$ inches. The keys of the pedal are also of wood, flat in shape, and so placed as to be worked easily by the player.

The keys of the clavier are connected to the clappers of the bells in a manner similar to that of the tracker action of an organ, bronze wires and steel transmission-bars in the carillon taking the place of wood in the action work of the organ.

These delicate instruments are also made by the Taylor company on their own premises and are among the most wonderful exhibits of their craftsmen's skill.

An important adjunct to the carillon is the practice clavier which allows the player who desires to practise frequently to do so without disturbing those within sound of the bells. The clavier supplied by the firm for this purpose has a keyboard with a touch exactly similar to that of his carillon, the only difference being that the hammers connected with the keys strike little metal bars instead of the bells.

SUPPLYING FORMER MAKERS

Since engaging in this branch of the industry, Loughborough has not only supplied many carillons for Great Britain and the Dominions, but has also furnished new installations for the Netherlands, which was the carillon's original home and where for nearly 200 years no new carillons of any size have been made. Amongst these may be mentioned the noble carillon of forty-nine bells which hangs in the new Town Hall of Rotterdam, together with a carillon of thirty-six bells which was supplied in 1924 for the town of Zutphen. In recent years an even larger number of carillons have been shipped by the firm to the United States of America, which today possesses more of these instruments than any other country in the world.

It is not without a sense of national pride that one considers how the products of this ancient foundry have kept pace with the changing demands of the times, and have made the name of Loughborough known to the New World no less than the Old. With this pride, too, is mingled gratitude that in a world of standardized products, this home of ancient craftsmanship should still survive, a place where inherited skill and the hand of the worker still count for more than the robot intelligence of the all-conquering machine.

America on the Highway

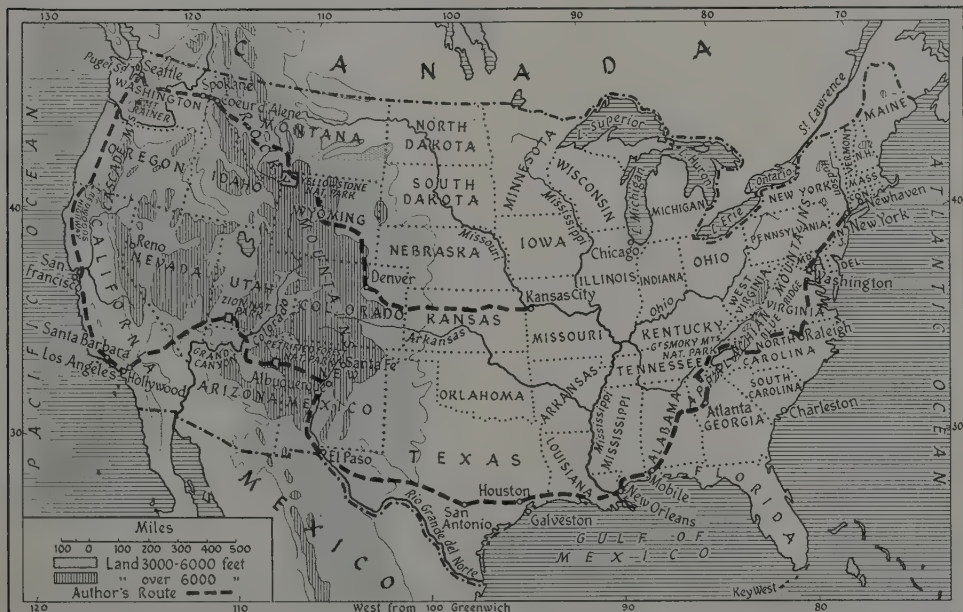
by ELSPETH HUXLEY

In the far-off Age of Reason, it was the fashion for young Englishmen to complete their education by a Grand Tour of Europe. The enormously increased facility of transport, and the growth or revival of other centres of civilization, have made it both possible and desirable for the would-be Citizen of the World to extend his tour to more distant continents. Among these America, and particularly the United States, deserves priority; no foreign country is so worth our understanding or (by reason of preconceptions and delusive affinities) so easily misunderstood. And the best and cheapest method of seeing America is to see it on the highway

ROADS, in England, exist to link together towns and villages. The villages were there first; the roads followed. In America it is often the other way about. In the West there were no towns until roads that led at first to nowhere had been worn down by the wagon-wheels of the advancing settlers. The Oregon and Santa Fé trails, historic roads cut by blood and suffering, by faith and greed, opened up the West; then symmetrical wire-fenced farms, ugly sprawling little wooden towns and fast-sprouting cities appeared

beside them, like green plants that spring up along an irrigation channel. In the older-settled East many of the roads were cut by the military so that expeditions could advance into hostile country to subdue the Indians.

And so, perhaps for historical reasons such as these, American roads are a great deal more than merely straight or twisting lines between two points. They are almost a way of life in themselves. Big and thriving industries have sprouted from them. Motor transport employs, directly





E. Donald Sterner

New York has better road exits than London: southwards from crowded Manhattan Island, under the Hudson River, the motorist is released onto the Pulaski Skyway, straddling high over Jersey City

and indirectly, six million men. There are over 197,000 petrol filling stations, some 10,000 tourist camps to provide over-night shelter, and no one knows how many 'tourist homes' where the traveller is given bed and breakfast in a private house. There are unnumbered thousands of way-side eating-places; and there are four million trucks which carry goods, night and day, along America's three million miles of highway.

On these roads there are 28,000,000 cars—almost one car to every four people. (If this ratio existed in Britain we should have five times as many cars—ten million instead of two.) In spite of this remarkable car concentration in the United States (over 70 per cent of the world's total car population), there are fewer vehicles to each mile of road. In America this ratio is 8.6 cars to every road mile, and in Britain 11.2. From this it is clear that

even the prodigious growth of the American automobile industry has not outstripped the even more prodigious growth of roads.

Most of this great road expansion has taken place since the war. Main roads have been built, and are controlled, by the States, and minor farm roads by the counties. Development has been financed out of State petrol taxes (first imposed by the State of Oregon in 1919) and by car registration fees. All States now impose a gasoline tax, which varies from two to seven cents a gallon and averages only 4.3 cents. In addition, the Federal Government now has a one cent per gallon tax. Taxation of about 2½d. a gallon seems light indeed in a country where ninepence is paid, and the American motorist clearly gets a great deal more for less money than his British counterpart.

The reason, of course, is that the petrol tax really is used for the roads, instead of going into general revenue. Since the depression the temptation to poach on road preserves has proved too much for some of the States and a tendency to divert gas-tax receipts to other uses has appeared. It has been met, however, with prompt and vigorous opposition from all types of road-users' organizations. These have joined together in a body called the National Highway Users' Conference, and succeeded in persuading several States to pass legislation making the diversion of car taxes illegal.

Cheap petrol—it varies from about ninepence to a shilling a gallon—stimulates travel, and the American car has to do far more work than its English sister. (The average travelled is nearly 10,000 miles a car each year.) People seem almost to live in their cars; indeed, many of them literally do. Recently a strong boom in trailers (caravans) has developed, and at one time there was said to be something like a million individuals permanently living in their trailers, without any other home.

THE FEDERAL-AIDED HIGHWAYS

The Federal Government made grants of up to half the cost of construction of the main trunk roads, on condition that the State concerned paid the other half and then maintained the road. An Act of Congress passed in 1921 laid down the principle that up to seven per cent of the country's total road mileage should become part of a Federal Aid System. These Federal-aided roads are under the control of the U.S. Bureau of Public Roads in Washington, a very efficient concern (for some obscure reason forming part of the Department of Agriculture), which has been able to enforce certain standards of width, surface and general construction. This Bureau maintains a research station outside Washington where road problems for the whole of the country are studied.

Normal Federal grants total about £40,000,000 annually, in addition to £137,000,000 raised by the State gas-taxes; and, quite apart from this, enormous sums have been allocated to road construction and improvement since 1930 as part of the unemployment relief programme.

What are these roads like to drive on? It may perhaps be best to answer this question in a roundabout way: by giving a few personal impressions of a 10,000-mile automobile trip recently made from New York south to New Orleans, across the South-West to the Pacific, up the coast to Seattle, and back across the Rockies and the Great Plains to Kansas City.

You leave New York by driving under the Hudson River through a four-lane tunnel, and then by skimming over the top of Jersey City on the Pulaski Skyway, and find yourself on the most used of all American roads, U.S.1. (All Federal-aid highways are marked at frequent intervals by a white metal shield bearing the letters 'U.S.' followed by the number of the road.) U.S.1 runs 2,100 miles from the Canadian border to Key West, an island south of Florida's tip. It is at first a very imposing affair: concrete surface, four lanes of traffic, and 'clover-leaf' intersections, arrangements for doing away with all cross-roads and turns across the line of traffic by making one road burrow underneath the other. South of Washington, U.S.1 dwindles to the smooth two-lane concrete highway which is now the normal standard for most Federal-aid and major State highways.

SAFER ROADS—AND WHY

Many points of difference between English and American driving are likely to strike the visitor at once. The most obvious is the uniformity of traffic. The absence of flocks of wobbling bicycles, of horse-drawn carts rumbling along in the middle of the road, of motor-cyclists

trying to squeeze through six-inch gaps between mudguards, makes the highway seem like a paradise. Almost everything on the road is a car or a truck; and not only that, but a car or truck of relatively uniform size, shape and performance. The whippy rat-like sports car, and the steam-propelled road-train emitting a dense smoke-screen and disgorging red-hot cinders into a pan underneath its belly, alike are missing. The roads feel a great deal safer, as a result.

Not only do they feel safer, but they are: more than twice as safe, in fact. The number of road deaths per 10,000 cars in the U.S. is 13; in Britain it is 29.7.

Other factors besides uniformity of traffic—though probably this is the most important—make for greater safety. In all States there is a very strict rule, universally obeyed, against stopping the car, even for a few moments, on the roadway; you have to pull right off the pavement (as the cement or macadam surface is called) onto the shoulders. No American road has a curb. That famous hazard of the English road, the car or van parked four-square in a two-lane road just around a blind bend, is therefore eliminated. Another rule much more strictly enforced than in Britain is that which enjoins drivers to stay on their own side of the road and not to hug the middle. Road discipline and road manners in general are far better.

THROUGH THE APPALACHIANS

In Virginia the newly completed Skyway which follows the sharp spine of the Blue Ridge Mountains down into Tennessee, with the rich and smiling Shenandoah Valley (world-famous for its apples) on the one hand and the rolling, wooded piedmont falling away towards the sea on the other, must be one of the finest drives in the world. Much of this magnificent road, equipped at intervals with bays where cars can park while their occupants gaze at the view, was built by boys of the

Civilian Conservation Corps, one of the New Deal's most successful experiments. The road south runs, all the way, through country soaked in memories of the struggle which, once below the Mason-Dixon line, must always be referred to as the War Between the States. At frequent intervals one sees big metal placards by the roadside, each one commemorating in detail some incident of the war.

Virginia, unlike the rest of the South, gives a sleek impression of wealth and well-being. Most of the famed F.F.V. (First Families of Virginia) have long since sold their spacious pillared houses, that stand so graciously amid lawns, magnolias and tall shady trees, to rich Northerners; but the land, at any rate, is well kept, and the towns are prosperous. Once south of Virginia you are in tobacco kingdom. Three North Carolina towns—Winston Salem, Raleigh and Durham—are the seats of the triumvirate who rule the cigarette world: Camels, Chesterfields and Lucky Strikes. Huge factories dominate the grimy towns, and all the familiar signs of industrialism are there.

From the tobacco-fields of North Carolina you rise swiftly into the majesty of the Appalachian Mountains, which run from Pennsylvania into Alabama, and for a century kept the North American settlers in their eastern lee. Here you may enter the Great Smoky National Park, famous throughout America for its wild rhododendrons. A smooth white concrete road winds along deep gorges and creeps around the precipitous shoulders of black wooded hills; and there you see, hanging in brilliant festoons as if a generous hand had poured them freely over the mountain slopes, vivid splashes of rhododendrons, pink and mauve and white against the dark pines.

Atlanta is equally famous as the birth-place of *Gone With the Wind* and the industrial capital of the South. Southerners declare that it is run by Northerners and Jews; if this is so, the newcomers have



Elspeth Huxley

Small towns in Virginia reflect the prosperity of the countryside and echo the urban motifs common to the whole United States. Life revolves around hotels, drug-stores and the movie theatre

made great concessions to the tempo of the South. The day we arrived Georgia was voting, belatedly, on the prohibition issue. She voted dry. There is nothing dry about Southern hospitality, and we expressed surprise that a people who so obviously enjoyed their drink should vote against its open sale.

"Well, it's this way," our host drawled. "So long as the State is dry, the way it is now, all I do is call the bootlegger and he delivers the liquor right at my door. Now, if Georgia voted wet, I'd have to go down to the liquor store and stand in a line and carry the stuff all the way home. So I voted dry."

THE TORPID SOUTH

Once in Georgia and Alabama you are in the Deep South, and it has a feeling all its own. Hot, torpid, lazy—too lazy to finish a sentence or a word. Every vowel

seems as deep as the ocean, each word spins out so that you wonder where it will end. The hard white road flows over gently undulating country where cotton-fields alternate with patches of small, scrubby Georgia pines, and whose soil is the colour of new-burnt bricks.

On the feeder roads one sometimes passes mule-drawn buggies taking Negro parties out to pay calls or visit the store. (Nowhere else but in the South do you see animal-drawn traffic.)

The towns are small and listless and all the same. First come the rough unpainted cabins of the Negroes. Pale dispirited grass grows up to the porch on which one may often see a fat coloured woman swaying back and forth in the inevitable rocking-chair, puffing perhaps at a clay pipe, and staring out at nothing. Then comes the main street, wide and hot, with a row of stunted trees on either side. There is a



Elsbeth Huxley

The wild rhododendrons of the Great Smoky Mountains are as famous in America as the azaleas of Charleston; cascades of brilliant blossom splash the steep hillsides among dark green pines



Elsbeth Huxley

Chain-gangs still exist in Georgia; the legs of these road-tidying convicts are shackled



In the Deep South, Negro families go out to call in mule-buggies. Very few stretches of State highway remain, as here seen in Alabama, without concrete or tarmac surface

Elspeth Huxley



The standard two-lane concrete road swings past red-soiled cotton fields and unpainted Negro cabins

Elspeth Huxley



Elisbeth Huxley

Paddle-steamers hauling long strings of barges chug along the weedy bayous which intersect the hot swampy flats of western Louisiana, carrying oil down to New Orleans for shipment

drug-store, the focus of town life, with its soda fountain, its candy counter, its newsstand gay with the lurid covers of the 'pulp'; a lunch-bar with a marble-topped counter and high stools; a few shops; a garage and a filling-station; and an air of dilapidation, monotony, and makeshift sadness beneath a heavy biting sun.

The entrance to New Orleans from the east is impressive, for you seem to be approaching across the sea. The tideless, mud-brown Gulf of Mexico is on the left, and a big lake on the right; and you cross, perpetually, marshy arms of water spanned by enormous suspension bridges dedicated to Huey Long. We plunged straight, it seemed, into a vast crimson sunset which spread far and wide over sea and lake, so that New Orleans was invisible until we found ourselves in it, driving along wide modern streets that by-pass the cramped, overcrowded and intriguing streets of the old Spanish and French quarters, where

wrought-iron balconies of French tradition adorn the houses. New Orleans is famous for its French creole cooking, rich and heavy, for its gin swizzles, for its 'wide-open' gambling-houses and for its 'jumbo' frogs, animals of immense size caught in the swamps round about and sold to canning factories.

One's first sight of the Mississippi cannot fail to be exciting, although there is nothing spectacular about the river except its size. It is so broad and so brown, thick with soil stripped from farmlands up the valley, that when one looks down on it from the top of the grass-covered levées that reinforce the banks, its slow swirling movement seems like the slight rippling of muscles beneath the supple skin of a Polynesian. The land on either side of the levées is dead flat.

West of the Mississippi we drove through thick tangled swamps along a dead-straight road crowning a dyke. On either

side was water and beyond a jungle of vegetation; the water was almost wholly covered with a mat of purple hyacinths. Thick swamps are intersected by sluggish, muddy bayous. On the bigger ones paddle-steamers chug industriously up and down between New Orleans and the oil-fields, dragging long strings of barges. There is something remarkably dispirited about this flat, wet, bayou-bisected land. The only crop is sugar-cane, heavily subsidized by the Federal Government. The lethargy born of malaria is in the air. If you stop for any length of time, perhaps in the shade of a grove of water-oaks, gigantic mosquitoes—jumbo ones, like the frogs—fix their talons into your flesh, and when you squash them they bespatter you with blood.

CAMPS AND CAFETERIAS

It is best in this baking heat to travel early and late, and at high noon to rest in

the shade. From midnight to sunrise we slept in tourist camps which flank every small town: clusters of wooden cabins, each containing two beds, a table, a shower and a toilet. Started to provide cheap overnight shelter for motorists, many of these camps have grown into comfortable and even luxurious holiday centres. Some have spurned the name tourist camp and become 'Auto Courts', or, as the latest addition to the language, 'Motels'. In the National Parks, in particular, they cater for holiday-makers. Open-air ovens are provided where hamburgers may be grilled, frankfurters roasted, and kettles boiled; firewood is ready stacked in piles, free of charge; and water is laid on. Everyone fraternizes with his neighbour, the State licence plates always providing the opening gambit: "So you're from Pennsylvania, huh?" In the evening friendships spring up over coffee and hot dogs



Elspeth Huxley

Some tourist camps are ramshackle, even squalid; others, like the one in Utah of which this is only the central restaurant, tempt tourists, with their comfort, to stay longer than overnight



Elspeth Huxley

A typical tourist camp in Yellowstone Park where you may hire a cabin equipped with stove, firewood and water, or bring your own caravan; the larger building (a cafeteria) serves cheap meals



Elspeth Huxley

Visitors from Kalamazoo brought their delivery van, suitably painted with slogans, to sleep in



Elsbeth Huxley

Roadside eating-places are scattered plentifully along the highways; some send out the order on trays which are fixed to the car's window. A road-restaurant in Texas specializing in fish



Elsbeth Huxley

Inside, all are alike in essentials; the food, with local variations, is standardized from coast to coast

or 'weenies' (baby sausages) and sing-songs around a camp fire bring together tourists whose differing accents proclaim their widely scattered States.

Big roadside camps may be equipped with cafeterias; or you may seek your meals at a highway snack-house (always called, in the South, a 'Bar-B-Q') or at a café in the nearest town. Here you may patronize the marble-topped lunch-bar, with its swivel stools and its choice of sandwiches, chicken dinners or 'blue-plate specials', or the coffee-shop of the hotel, where a slim, well-dressed waitress will take your order. No one is more typical of modern American life than the coffee-shop waitress. Business men who are constantly on the roads often distinguish the sprawling towns they come to, in other ways so identical, by a waitress in the coffee-shop of the hotel. She seems always to be young, attractive, efficient and friendly. She takes a lively interest in your business, and in turn tells you all the gossip of the town.

Most of the filling-stations belong to the big oil companies, just as tied houses belong to breweries in Britain. Great rivalry therefore exists between the chains. At the bigger filling-stations a small army of men falls on your car, as soon as you pull in, to check oil and water, clean your windshield, test the pressure of your tyres, polish up the paint. Excellent free road-maps are showered upon you, and the free use of ice-water fountains and 'comfort stations' are placed at your disposal.

TEXAS THE VAST

Perhaps it is only imagination that creates a sharp change in atmosphere as soon as you cross the Texas line; but, as you proceed through that fabulous State, the change becomes unmistakable. We noticed it as soon as we stopped for supplies of the great drink of the South and South-west, iced tea, with the thermometer standing at 105° in the shade. "You bet," said the girl behind the lunch-

bar in answer to our request; this is South-west for 'Sure', 'Okay' and other forms of assent. She was brisk, alive, after the languid or indifferent Louisianans. And it is in the West and South-west that the real social democracy of American tradition seems most evidently to survive. The man at the gas-station strolls up to your car, puts his foot on the step, and says: "What d'ye need, fellers?" In the East industrialism has tended to corrupt friendly manners, and in the South you find the barriers of race.

Texas is the last stronghold of the old American custom of quick and limitless expansion. Houston has grown from a small frontier town to a city of nearly half a million since the war; now it is the oil centre of the U.S., as brisk as Chicago although as hot as New Orleans. With it has grown Galveston, now a sort of Blackpool, full of scenic railways and ferris wheels and big hotels. Texas, 800 miles from border to border, is a country rather than a State; it has the variety of a continent within its frontiers. In the east it is humid and flat, devoted to cotton and oil and full of Mexicans, who are generally regarded as a Problem. Round San Antonio is The Valley, rich land good for truck farming and famous for cantaloups. North is the Panhandle, given over mainly to wheat and nowadays to dust storms. West is the range, half of it semi-desert, where grass is brown and sparse and cacti flourish, and vultures wheel in a cloud-billowed sky over the bleached white skulls of cattle or the fresh carcasses of rabbits. It seems remarkable, when you cross it in summer, that cattle should thrive in such parched surroundings; but they do, and the herds of white-faced Hereford yearlings being driven to the station—nowadays they are sent to Iowa and Illinois for fattening—with genuine cowboys riding in the dust behind them, look sleek and sturdy. In this raw, exhilarating State it is strange to come upon relics of an old and quieter past, such as

Real cowboys still exist in Texas. A genial elder who remembers better days, when cattle-rustlers rustled and roping steers was part of the routine



A yet older Texas is recalled by the 18th-century Catholic missions, built when the oil-rich State was part of Spanish Mexico. A mission near San Antonio, now a public monument

Elspeth Huxley

Elspeth Huxley





Elspeth Huxley

The Pueblo village of Acoma, in New Mexico, dates from before the Spanish conquest. Its houses and domed communal ovens, as well as a deserted monastery, are built of adobe (sun-baked bricks)



Elspeth Huxley

Navajo women, riding on high Mexican saddles over the parched mesas, herd their husbands' sheep

the few beautiful 18th-century Spanish missions which remain.

In the South-west you may put your foot down on the accelerator and, if you have a high-powered car, go for hour after hour at a steady seventy or eighty miles an hour. There is nothing to slow down for; no bends, no cross-roads, no villages. Caution watches only for overheating engines; the greatest danger is that you may be mesmerized by the very straightness of the road, as a chicken is mesmerized by a chalk line, and fall asleep. It is here that the radio comes into its own. Swing, crooners, Amos 'n' Andy, retailers of Hollywood gossip, help you to fight sleep. Under a full moon that lit a white streak of road running east and west across the dark parched plain of western Texas we sat on the running-board munching sandwiches, and followed every move of the Braddock-Louis fight two thousand miles away in New York City.

Even on the long straight roads of the South-west, where the next town may lie fifty miles ahead, you sometimes come upon a hitch-hiker trying to 'thumb a ride'. In kinder sections of the country they abound. When a car approaches they halt to hoist a clenched fist with the thumb extended, jerking it in the direction that they want to go. They show no resentment when you pass them, for that is what they expect. No one in his senses would stop, nowadays, to give a lift to a hitch-hiker. Too many kind-hearted motorists have been knocked on the head and thrown into a ditch as their reward. Hitch-hikers have disguised themselves as women carrying babies, as Army Officers, as college boys and as clergymen, and then, for the sake of a few dollars and the car, have murdered motorists who took pity on them.

New Mexico is a strange State of canyons, erosion and Navajos. (Over half of it is Indian reservation.) You rise steadily from Albuquerque until you find yourself on a treeless plateau 6000 to 7000

feet above sea-level, where crisp air, deep skies and clear distant horizons unite to remind you of the high veld of Africa. By the roadside you pass little stands where Navajo women offer rings and silver and turquoise jewelry for sale, and flocks of Navajo sheep, descendants of Merinos brought by the Spaniards to the New World in the sixteenth century, herded by men or women mounted on small sturdy ponies.

The Pueblo Indians insist upon living on the tops of impregnable rocks as they have always done, and hauling every drop of water by hand, rather than move down to the springs as the Government urges them. Acoma is such a place. You climb hundreds of rock-hewn steps and



Elspeth Huxley
The hitch-hiker thumbing a ride is a familiar but nowadays forlorn sight; crimes of violence have made motorists wary of stopping for strangers



Access is given to the gigantic canyon of Zion National Park, Utah, by a splendidly engineered tourist road

pay a toll to a stern blanket-clad lady at the top to see the village. There are plenty of Indians to be seen, but even more American artists, sketching the fat domes of the communal adobe ovens built out in the street. There is an old Spanish adobe church and monastery, too, with the tradition that one day the Indians revolted and pitched the priests off the rock a thousand feet onto the desert below.

Once part of this 6000-foot-high plateau was below sea-level, covered by a hot and swampy jungle of great trees. The earth's upheaval buried this forest; the trees were turned to stone, or at least to minerals, and remained interred for many centuries. Gradually the earth's surface rose, and slow erosion laid it bare. Now, in the Petrified Forest National Park, you can see the strange solidified corpses of long-dead tree-trunks, whose sap has been replaced by vividly coloured deposits of calcium, magnesium and iron salts in a hundred different shades of orange, green, purple and red.

SERVICE FOR TOURISTS

We entered the Mormon State of Utah by way of the clean, shady little town of Kanab, 6000 feet high and the gateway to Zion National Park. Every house gleamed with white paint and boasted a garden with green irrigated lawns. The cabins of the tourist camp were fresh and spotless and stood among fruit trees, and the people—polite, quiet and hard-working—had the characteristics of mellowed New Englanders. In essence Zion Park is a gigantic canyon enclosing the Virgin river. The rocks which tower sheer above it are formed in layers of brilliant red and dazzling white, like some gargantuan Neapolitan ice. Like the Grand Canyon, it was once under the bed of the sea. The layers were laid down as mud and ooze, converted into rock by pressure, and cemented by deposits of lime, silica and iron. They rose, it is thought, from below sea-level to 12,000

feet, and are now being worn down again by erosion until one day the land will all be flat.

The road through Zion Park is a great piece of engineering. It climbs above the canyon and then plunges into the heart of a mountain of solid rock through a tunnel 5607 feet long, provided with peep-holes through which superb views down the canyon can be seen. All this has been carried out for the sole benefit of tourists by the National Parks Division of the Department of the Interior, a body which excites more and more admiration in the tourist's mind as he passes from one Park to the next, directed always by courteous young men and showered liberally with booklets and maps.

PEACHES IN THE DESERT

After that, Nevada; and more grey yucca-speckled desert, so that you wonder if it will ever end. Now and again you come suddenly to an irrigated valley and blink with astonishment at the sight of green grass and trees. Here stalls by the roadside sell peaches and apricots, but in between you do not even see grazing cattle. In the tarmac main streets of the little towns your feet stick to the melted tar. Cars that you meet have water-bottles slung under the front axle so that the radiator can be constantly refilled, and you have to slow down to about fifty m.p.h. to prevent boiling. What the towns live on is a mystery. "What is this—a cow town, or a mining town, or what?" we asked a waitress in a fly-blown café, air-cooled but still stifling. "Or what," she replied tersely; and that seemed to sum up the general opinion of the inhabitants. But near the California line the towns have an industry: divorce. Lesser Nevada cities gather crumbs that fall from the great Reno's loaded table. Any town, in fact, that has a casino can expect good business from would-be divorcees, who must stay six weeks in the State to qualify.

California stands alone, there is no State

like it; and it introduces itself immediately. When we reached the Plant Quarantine Station a young, good-looking plant inspector (failed Hollywood, perhaps) told us quickly that he was a first cousin of a (specified) English duke, that he had discovered several new species of insects for the British Museum, and that he shared quarters with a man who, clad in skins, shot mountain lion and deer with bow and arrow. Then he swung our tennis rackets with an experienced wrist, discussed Fred Perry, and passed the car through; and we knew that we were in California. We slept that night in a hotel disguised as a Castilian castle, and came next day through irrigated orange-groves and avenues of eucalyptus to the sprawling city of Los Angeles.

Apart from Hollywood and a rocky scenic coastline, California consists of a lot of oil-fields and three irrigated valleys lying between barren desert and hills—the Imperial Valley, furthest south; the San Joaquin; and the Sacramento Valley east of San Francisco. Irrigation has made these as fertile, probably, as any in the world; yet in the same State lies Death Valley, said to be the only spot on earth where no life, animal or plant, is able to survive the drought and heat.

Our road north ran between the uneven edge of the Pacific, delphinium-blue below us, and a line of high and craggy hills. Breezes off the Pacific at last brought coolness, and the colours of canna, fuchsias and bougainvillea flamed in the gardens as we passed. If you deviate over the hills inland the thermometer shoots up twenty degrees, and you find yourself sweltering again at 100° in the shade in the flat, rich, black-soiled central valley. U.S.101, in places blasted out of a precipice, follows the jagged coastline through the famous San Simeon ranch within sight of the Hearst castle, where, it is said, telephones lurk behind trees at strategic points throughout the ranch, and sea water is piped thirty miles to a swimming pool.

TREES OLDER THAN HISTORY

San Francisco, built upon numerous hills, gives, more than any other American city apart from New York and Chicago, the impression of being a capital with a life and a culture of its own. North of it, over the new Golden Gate bridge which spans the harbour, you come to the Redwoods Highway. This, one of the most famous roads in North America, winds through a forest of the tallest and oldest trees in the world, the California Redwood (*sequoia sempervirens*). Each tree is three or four hundred feet high, and often rises two hundred feet before the first branches begin. The tapering trunks are more majestic and true than the pillars of a great cathedral. Some, it is calculated, are as much as five thousand years old. It is impressive to think that they were, perhaps, knee-high when the first Egyptian dynasty and the dawn of civilization began, and more than middle-aged when Caesar conquered Britain.

It takes all day to drive along the Redwoods Highway. Nestling among the mighty boles are many tourist camps and trailers; part of the Redwood forests are in a State Park, and there is good trout-fishing in streams which, unlike all those which we had so far come to, were clear and mudless. Across the Oregon line the redwoods gave way to smaller pines and then to more open country, and we came to a land of green dairy farms and rich orchards whose trees were dripping with an abundance of cherries. The air was heavily scented with clover hay, fields were green with oats and winter wheat, and pastures were as lush and fat as those of Somerset. Every white-painted farmstead had neat, substantial buildings, a garden, and a clump of trees.

Seattle, the lumber capital of the Northwest, was our turning point. From the Puget Sound we headed east again, passing through the fine dairying land of western Washington where the world's record Friesians are bred, and climbing



Wide World Photos

North of San Francisco runs the Redwoods Highway, where 400-foot trees tower above the road



Harold J. Shepstone

The lower falls of the Yellowstone River from Lookout Point. They are twice as high as Niagara and so great is the volume of water that the earth around trembles

Elspeth Huxley



The wild—but far from savage—bears of Yellowstone Park bring their families to the roadside to beg for buns and sugar, not to be photographed; this mother is disappointed, but agrees to pose

the high Cascades under the lee of Mt Rainier, snow-capped even in July.

An abrupt change comes over the country once you drop down over the crest of the Cascades. It becomes at once dry, brown and flat. Here are the wheatlands of Washington, where farmers practise dry farming and take one crop every two years. After Spokane, headquarters of the 'inland Empire' and wheat centre of the far West, the road starts to climb into the mighty Rockies. It crosses into Idaho famous for big potatoes, silver mines, and winter sports in Sun Valley, and passes through little mining towns (silver and copper) with romantic names such as Coeur d'Alene, perched on the sides of steep valleys with pine-clad hills towering above them. In places wooden tunnels have been built to protect the highway from snow. Only a few arteries remain open in winter, and are kept clear with great difficulty by the perpetual use of snow-ploughs.

THE HEART OF THE ROCKIES

We drove along the winding gorges of the Rockies for the best part of four hundred miles, black crests towering above, and chasms falling away beneath, to reach Yellowstone Park, in a corner of Wyoming. There, as everyone knows, bison and moose roam in their natural state and wild bears, at large in the woods, beg insistently for buns. Old Faithful, the famous geyser, goes off punctually at intervals of sixty-three minutes and $\frac{9}{35}$ seconds: beavers construct dams as of old, and pack-horses convey the visitor up and down canyons. All these things come up to expectations—particularly the bears, whose reading of American psychology is so correct that they bring their small cubs to melt tourists' hearts by the roadside—and in addition the visitor can observe young America taking its annual vacation in camp.

In Yellowstone the National Parks Service are at their best. Their object is to make it easy for the public to camp in the



Elspeth Huxley

At the entrance to every National Park a courteous ranger stops the visitor and gives him maps, leaflets, advice about what to see

Park in as much comfort as possible. The visitor can make a choice of three courses. He may bring a tent or trailer and camp in certain allocated areas, where he will find water laid on in taps, free firewood, and sanitation. Here he may cook his own food on an open fire and live like a true Boy Scout. The more rheumatic may hire a cabin for two for \$1.50 a night and feed at a central cafeteria; and the luxury-loving may live in a comfortable and fairly expensive log-cabin hotel. For amusement, horses and guides may be hired or fishing permits obtained, and excellent roads traverse the park in all directions, so that almost everything can be seen, by the lazy, from a car.

Our road from Yellowstone ran east across the rolling high plateau of Wyoming,



Elsbeth Huxley

A desolate Dust Bowl farmstead in eastern Colorado. It is still inhabited though the surrounding land, good grazing before it was ploughed, has been swept bare by dust storms after drought

short-grassed country excellent for sheep, through Colorado to Denver, the State capital, over 6000 feet high. East of Denver you begin a steady, though not spectacular, drop; and before you realize it you can see the Rockies behind you, and in front only an immense and slightly undulating plain, some of it planted in thin short-stemmed wheat and some of it bare and derelict earth. This is the Dust Bowl, ravaged by wind, where every spring black choking dust-storms roll across the plain.

FARMS GONE WITH THE WIND

It is depressing country. Even where cultivation has been abandoned there is no grass, only tufts of snakeweed and bare earth between. There are no trees. Each farmhouse stands out nakedly on the plain, shadeless and bleak, with its inevitable iron windmill outlined sharply against a hard sky. Dusty towns cluster around grain elevators on the railroad, and the undulating waves of monochromatic plain that roll to a flat horizon all around them create the illusion that they are floating on a noiseless sea.

For almost three hundred miles we scarcely saw a tree, and the thermometer stood at 105° in the shade. Almost as abruptly as they had begun, the Great Plains ended. As we approached Kansas City the country suddenly became wooded and hilly again, with frequent streams. Stunted wheat gave way to tall, healthy-looking corn. We were coming into the Middle West, the fertile, rolling, deep-soiled country of corn and hogs and big productive farms, of trees and tall silos and fat cattle, of which Missouri, Iowa and Illinois are the heart.

So we came to Kansas City, bustling and alive, for many years the last outpost of civilization where the two great Western trails, the Oregon and the Santa Fé, took off into the unknown. Roads and railroads to the West still converge on Kansas City; but where a long line of covered wagons once creaked off over a bumpy prairie, the modern car glides out over smooth all-concrete roads, a few gallons of petrol in a readily replenished tank; and the air-conditioned, diesel-driven Santa Fé Chief thunders through on its two-day journey to the Pacific Coast.



E. O. Hoppé

English Georgian translated—an 18th-century planter's residence near Charleston, South Carolina



E. O. Hopf

Where lovely ladies of New France took the air: balconies in the *vieux carré* of New Orleans—



E. O. Hoppé

—and where peremptory preachers of New England laid down the law: Trinity Church, Newhaven



Black Star

Cliff-dwellers of A.D. 1938 live perched aloft in the towers of Radio City, New York—



—as did the cliff-dwellers of prehistoric times in those of Mesa Verde, Colorado





Dollars by the thousand million enable official Washington to derive dignity from the Greeks. The new Archives Building



E. O. Hoppé

Chinatown in San Francisco, looking West, adds yet another note to the architectural medley of America

Ancient Monuments of Mexico

by RODNEY GALLOP

Articles already published have indicated the importance of the Indian element in Mexico and the relation between the modern national revival and the pre-Spanish, Indian past. Future articles will show some of the major surviving monuments of that past and will trace, in so far as it is known, the connection between the various centres of ancient Central American civilization. Finally, we shall survey the Inca remains at Cuzco in Peru and the present condition of the Peruvian Indians whose ancestors were the metropolitan subjects of the communistic despotism exercised by the Incas

IF, on the outskirts of Mexico City, you dig down in almost any maize-field or plantation of maguey aloe you are likely to find traces of the Indian peoples who lived on the shores of Lake Texcoco long before Cortes first set eyes on Montezuma's glittering city of Tenochtitlan. Not far down, you will come on the obsidian blades, the painted pottery and, with a little good fortune, the idols and jade beads of the Aztecs whom the Spaniards found in possession of the Valley of Mexico. Eighteen inches lower, however, you will begin to reach the artifacts of the Toltecs, a people of whom far less is known, but who are nevertheless thought to have attained a higher degree of culture than

their Aztec conquerors. The Toltec stratum extends for nine or ten feet before giving place to relics of a yet earlier civilization, belonging to peoples of whom nothing is known at all, and to which the name of Archaic is given for the sake of convenience.

If the old rule-of-thumb were reliable, and one could reckon on the earth's surface being covered at the rate of three feet per thousand years, one could be sure that the Aztecs had been in possession of the Valley of Mexico for four or five hundred years before 1520 (which there are other reasons for supposing to be substantially correct); that the Toltec civilization lasted from about 2000 B.C. to



THE VALLEY OF MEXICO AND ENVIRONS
Showing the Principal Sites hitherto Excavated
The area of the map above is indicated by the rectangle on the larger map



Stanford, London.



Photographs by Rodney Gallop

Round the Archaic pyramid of Cuiculco swirls a grass-grown sea of lava from Mount Ajusco (seen in the background), beneath another part of which were found the prehistoric remains of Copilco

A.D. 1000; and that the six feet of Archaic strata correspond with the period from 4000 to 2000 B.C.

Unfortunately, however, erosion and other factors render any such calculations completely unreliable, and contemporary archaeologists are inclined to compress into a very much shorter span the period represented by these remains. It is certain that the Archaic culture goes back to before the last great volcanic eruption in the valley, for at Copilco not only skeletons

but the artifacts which they used in life have been found under the petrified lava-flow known as the Pedregal at the foot of the now extinct Ajusco volcano.

Unfortunately geologists are at a loss to date this eruption even approximately. The one thing certain is that from the earliest days of its habitation there must have been continuity of civilization in the valley. For the Mexican Indians of today grind their maize on three-legged mortars, and use spindle-whorls for spinning, ex-

actly similar in design to those found under the Pedregal; and at the coming of the Spaniards the Aztecs were sacrificing their victims at pyramids of similar type to the Archaic pyramid of Cuicuilco, round which the lava still swirls in petrified current and cross-current.

Who were these first Indian inhabitants of Mexico and whence did they come? Many wild theories have been put forward to account for the population of the American continent, but sober opinion is agreed that they must all have come originally from Asia by way of the Bering Straits as recently as ten or fifteen thousand years ago and have slowly filtered southwards.

It is all the more remarkable that they have been diversified into innumerable races with distinct languages and physical characteristics. Wave upon wave of nomadic tribes swept down upon Mexico from the north and adopted the settled, agricultural civilization of their fore-runners, so that even today more than fifty native tongues are still spoken.

Several of these tribes, such as the Zapotecs and Mixtecs of Oaxaca, the Totonacs of Vera Cruz and the Tarascans of Michoacan, evolved cultures which, if they never rivalled the splendours of the Toltec, and Aztec civilizations, had a well-defined character of their own.

Even more controversial than the problem of American origins is the immediate origin of the Toltecs, of whose capital at Tula and its splendours tradition survived among their Aztec successors. It is not certain whether the ancient Tula was on the site of the modern town of the same name forty or fifty miles north of Mexico City, where no remains of any importance have yet been found, or whether it was not the place which the Aztecs called Teotihuacan ('home of the gods') where mighty pre-Aztec pyramids and other extensive remains testify to the existence of a great city in Toltec times.

The ancient city stands at the foot of

a long, low mountain, not far from what were once the eastern shores of Lake Texcoco. The two biggest pyramids, known popularly as those of the Sun and the Moon, rise out of a sea of prickly pear crested with palm cactus. The first is 216 and the second 180 feet in height. It is a mystery how they were built by a race which had no draught animals and, having never invented the wheel, cannot have made use of any contrivance dependent upon it such as the pulley. Any comparison with the pyramids of Egypt is apt to be misleading, for the Mexican pyramids served a totally different purpose, being built not as tombs for royal personages but as supports for shrines which, curiously enough, were mean constructions, often of wood, totally unworthy of such mighty pedestals.

At the south end of Teotihuacan, linked with the big pyramids by the so-called Highway of the Dead, is a great enclosure surrounded by fortifications. At one side of it stands the much smaller pyramid of Quetzalcoatl decorated with deeply carved effigies of Tlaloc, the Rain God, with circular eyes obsidian-filled, plumed serpent heads and sinuous serpents, conch-shells depicted between their coils, sacred to the God of the Wind.

The mythology of Ancient Greece is child's play in comparison with that of pre-Spanish Mexico, owing perhaps to some curious empirical quality in the Indian character. Thus, whenever a new wave of tribes conquered the settled inhabitants of the Valley of Mexico, they did not suppress the old gods or fuse their identities and attributes, but installed the new beside the old, thus causing appalling complexity and overcrowding in the Aztec Olympus. For instance, Huehue-teotl, the Archaic 'Old, Old God' of Fire, rubbed shoulders with Toltec Quetzalcoatl, and Aztec Tonatiah and Meztli, gods of the sun and moon. Relatively little attention was paid to the latter, but, although there was never any shortage



The two principal monuments of Teotihuacan are the Toltec pyramids of the Sun (below) and Moon (above), the former 216 and the latter 180 feet high, excavated and to some extent restored by the Mexican archaeologist Manuel Gamio



These pyramids are linked by the so-called Highway of the Dead with a smaller Toltec pyramid, dedicated to Quetzalcoatl and adorned with stone carvings of Tlaloc the Rain God, whose eyes are surrounded by circles representing serpents

Serpents are depicted more naturalistically in carvings which alternate with those of Tlaloc. Associated throughout Central America with lightning, with rain and with agricultural fertility through the water on which this depends, the Plumed Serpent is more particularly the emblem of Quetzalcoatl, the Toltec King-God





The circular temple of Calixtlahuaca is thought to represent the coils of the Plumed Serpent Quetzalcoatl. An outer core of which little remains has preserved from the elements an earlier inner building

of sunshine to ripen the crops, the Mexicans held Tonatiuh in great reverence, regarding him as the ultimate source of all life, and renewing his youth by human sacrifice so that he should never flag in his daily course across the sky.

Quetzalcoatl, the 'Plumed Serpent', god of the wind and, since the wind brings the rain, protector of crops, was one of the most important of the gods. Conceived in the form of a white-faced, bearded man, he may have been a deified human being, and Herbert Spinden, in *Ancient Civilizations of Mexico and Central America*, does not hesitate to describe him as a Toltec 'emperor, scientist and humanist philosopher' whose death he puts as late as 1207-08 A.D. Quetzalcoatl's return from the East was foretold for a year beginning with the day-sign 'One Acatl' (reed). The prophecy played into the hands of Cortes, who by an extraordinary

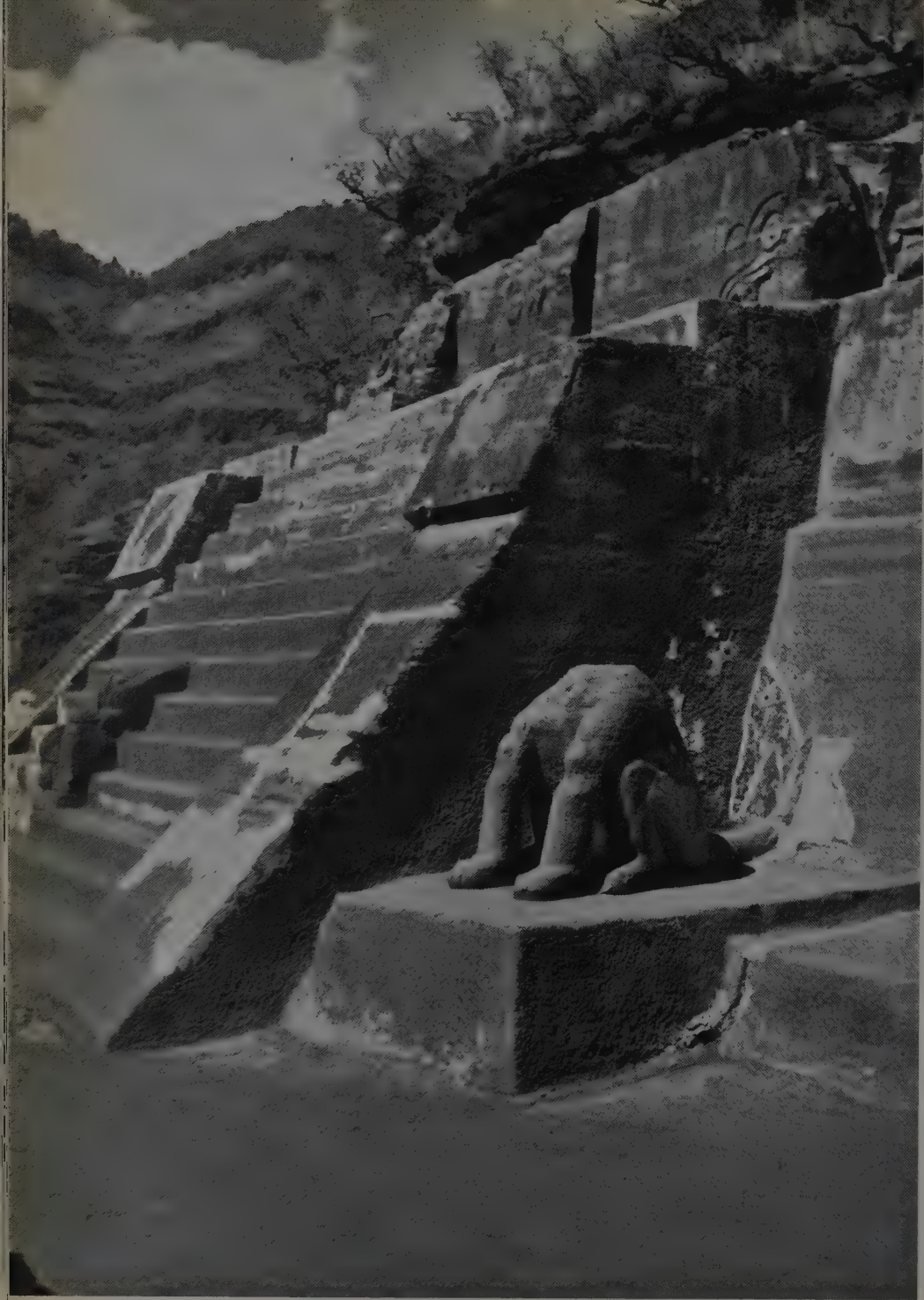
coincidence reached Mexican shores in a 'One-Acatl' year and was at first taken to be the long-awaited reincarnation of the Plumed Serpent.

The pyramid was common to the three civilizations which flourished successively in the Valley of Mexico, and many Aztec examples survive and have been diligently excavated: for instance, Tenayuca, restored in such a way as to reveal both the inner core and the successive outer casings which, according to their custom, the ancients built round it; Calixtlahuaca, the round shape of which imitated the coiled serpent of Quetzalcoatl; the miniature pyramid of Tepozteco perched on top of a sheer cliff 1200 feet above Tepoztlan, which still retains a small stone shrine carved with hieroglyphics; and Malinalco, in a similar situation, not built but hewn out of the solid rock with a true arch, the only example known to Mexican



The small pyramid of Tepoztlan, the imposing situation of which is shown above, is of especial interest in that it retains virtually intact the stone sanctuary shown below, carved with Aztec hieroglyphics including in the right background the sign representing 'precious liquid', the blood of human sacrifice

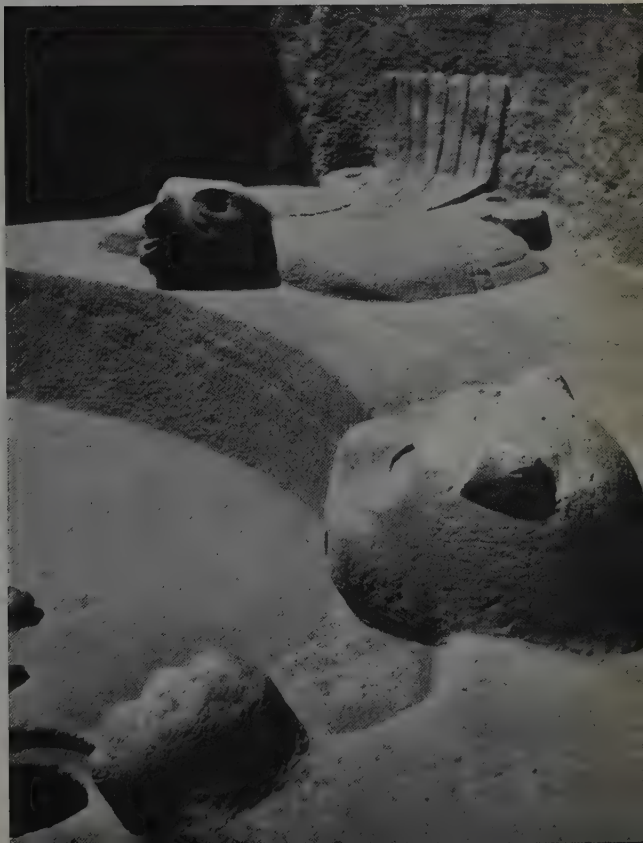




The recently excavated Aztec pyramid of Malinalco is hewn out of the solid rock



The broken circular arch shown above the stairway in the top right-hand corner of the opposite page leads to a circular sanctuary containing eagles and a jaguar



The bodies of these creatures are carved in relief, their heads hewn in the round. Apart from their significance as date signs these sculptures may symbolize the Eagle and Jaguar orders of knighthood

archaeology, leading to a circular shrine adorned with curiously stylized eagles and jaguars.

In contrast to these mighty works of architecture are the little heads of baked clay, an inch or two across, which the earth turns up on these and other prehistoric sites, and which were almost certainly votive offerings. Those of the Archaic period were modelled by hand and painted over in red and white. The Toltecs relied on incision for their decorative technique, and took to casting the figures in little moulds which were destroyed when a single impression had been taken. There was an intermediate stage during which the finishing touches were put by hand to a roughly moulded figure, and modelling was not entirely displaced by the newer technique even in the times of the Aztecs.

The variety of types is astonishing; heads of the Archaic period, crudely modelled with the eyes and mouth formed by patches of clay superimposed and slit, or fashioned with the consummate artistry, unrivalled by any later culture, of the so-called 'Pretty Lady' type; Toltec figures with eyes incised in an Oriental slant, heads bare of hair and ornament or adorned with elaborate feather head-dresses, ear-plugs and necklaces; Aztec heads with boldly curving forehead and nose, full lips and eyes half-closed in supercilious, disdainful detachment; all crowned with an astonishing range of head-dresses from turbans and mediaeval coifs to the entwined serpents of the 'Snake Lady' type.

When did the people live who fashioned the great pyramids and the miniature

CLAY HEADS FROM MEXICAN SITES

(1) and (2), heads of the Archaic period roughly modelled by hand, the eyes and mouth formed by superimposed patches of clay; (3) and (4) early Toltec heads; (5) a later Toltec head, cast in a mould, with a feather head-dress; (6) and (7) Aztec heads with cruciform or turban-like head-dresses



Foto Mantel

works of art of the Toltec culture? The age of Teotihuacan has been placed as high as four thousand and as low as twelve hundred years, the latter being probably nearer the mark, though the city had almost certainly been abandoned and its inhabitants dispersed before the arrival of the Aztecs.

In the absence of adequate and reliable data the only means of determining the age of these remains becomes the relationship between the civilizations of the valley and that other great Central American civilization, the Maya, which came to fruition in the first millennium after Christ in what are now the Central American Republics, British Honduras and the Mexican states of Yucatan, Quintana Roo, Chiapas, Tabasco and Campeche.

With Maya history we are on somewhat firmer ground. Not only had the Maya races a phenomenal knowledge of astronomy and time, but the religious importance which they attached to the calendar led them to set up monuments with date-signs which can be deciphered today. Scientists are not in complete agreement over the exact correlation of these dates with ours, but the margin of their disagreement does not exceed 250 years, a small matter when compared with one of nearly 3000 years in estimating the age of Teotihuacan.

That there was a relationship between the civilizations of Mexico and the Mayas does not admit of doubt. Not only did the Mayas construct pyramids similar in plan and purpose to those of Mexico, but the mythology of the two peoples has much in common, such as the use of a calendar with a sacred and a secular year of 260 and 365 days respectively.

More complex even than Indian mythology was the calendrical system. Of Maya origin, and involving abstruse astronomical and mathematical calculations, it was the supreme intellectual achievement of pre-Columbian America. The solar year or *tonalpohualli* consisted of 18

months, each of 20 days, with the addition of an extra period of 5 days, called *nemon-temi*, and with the necessary adjustments at longer intervals, to correspond with solar time, which were astronomically more accurate even than our leap year system.

The origin of the religious year (*tonalamatl*) has never been satisfactorily explained, since it corresponds to no astronomical period. Succeeding days were indicated by two parallel and independent series of designations, one consisting of numerals from 1 to 13, and the other of 20 names including, besides such symbols as the Acatl (reed) mentioned above, those of several animals, possibly totemic in origin and closely associated with Indian mythology, such as *mazatl* (deer), *tochtli* (rabbit), *coatl* (snake), *ocelotl* (jaguar) and *cuauhtli* (eagle). Since the least common multiple of 13 and 20 is 260, this period of days necessarily elapsed between two days bearing the same number and name (e.g. Twelve Deer). Similarly, since the least common multiple of 260 and 365 is 18,980, this number of days, or fifty-two solar years, elapsed before a given day again occupied the same position in the solar year.

This cycle of 52 years, known as the *xiuhtonalli*, played a very important part in ancient Indian ritual. Towards the end of each cycle, when the time drew near for the day Two Reed to coincide with the beginning of the solar year, the Aztecs grew anxious, for they believed that at the end of one such cycle the world would be destroyed by earthquake, as it had been on four previous occasions by flood, by hurricanes, by fire and by jaguars. To avert the threatened destruction an elaborate festival was held on the Huixachtecatl, or Hill of the Star, just outside Mexico City. All fires were first extinguished and all household utensils destroyed. At midnight a captive was sacrificed, and new fire was kindled in the cavity whence his heart had been torn



Museo Nacional

The great Aztec Calendar Stone of Tenochtitlan preserved in the National Museum of Mexico depicts among other things the Sun God Tonatiuh, the four world epochs and the twenty day signs

out. With great rejoicing the new fire was carried by runners into every village and house as a sign that the world would endure for at least another fifty-two years.

The Indian calendar is depicted on the finely carved Calendar Stone preserved in the National Museum in Mexico City. In the centre is a representation of the Sun God, Tonatiuh, together with the signs of the four previous 'suns' or world epochs. Round this central medallion runs a band formed by the twenty day signs of the *tonalamatl*. The outer circle is formed by two great snakes which may represent the

universe. The Zapotec remains at Monte Alban and Mitla in the state of Oaxaca, the Totonac pyramid of El Tajin in the state of Vera Cruz, and even a pyramid so near Mexico City as that of Xochicalco in the state of Morelos all show carved designs and reflect cultures transitional between those of the Mayas and Toltecs.

Near Oaxaca are two of the finest archaeological sites in the country: Mitla, the Zapotec town of the dead, and Monte Alban, a fortress on a hill which up to the coming of the Spaniards was disputed between the Zapotecs and their neighbours



The Palace of the Zapotec kings at Mitla is notable for the stone mosaics in different variations of the stepped key pattern which adorn its façade (above) and the interior chambers (left)

Mitla was regarded as the abode of the dead, and the entrance to the underworld was thought to be at a certain spot within the precincts of the palace. Miclantecutli, 'the underworld ruler', was the Aztec God of Death

the Mixtecs. Mitla became the residence of the Zapotec kings after the first millennium A.D., and probably knew no earlier civilization. Its wonderful palace, ornamented with stone mosaics in different variations of the stepped key pattern, was never overgrown, and apart from having been used as a quarry for later buildings has survived intact. Not so Monte Alban whose grass-grown mounds have yielded to the excavations of Dr Alfonso Caso, Mexico's foremost archaeologist, evidences of five successive civilizations, the earliest of which he believes to be between two and three thousand years old. The most enduring memorial of this early culture is formed by the row of bas-reliefs, popularly known as 'The Dancers', with curiously negroid features. Next comes a culture known to archaeologists as that of the 'Q Complex', followed by one strongly influenced by, and presumably contemporary with, Toltec Teotihuacan. The fourth

culture is that which yielded the sensational discovery in 1933 of the famous Tomb No. 7 and its treasure of elaborately worked gold ornaments, while the last is that of the Zapotecs and Mixtecs characterized among other things by remarkable funerary urns in the form of gods and men.

In the case of Xochicalco as of many others one feels the name of pyramid to be almost a misnomer, for it is no more than a stone platform about 15 ft. in height, and roughly 25 paces long by 22 broad, with a stairway at one end and steeply inclined sides all round. The walls are adorned with splendidly carved plumed serpents with double tongues, in between the coils of which are seated priests or worshippers with their legs crossed. On their heads are high, elaborate head-dresses. Their faces are averted in profile. From their ears hang earrings and round their necks are bead necklaces. One hand



Monte Alban on a mountain top near Oaxaca shows evidences of five successive civilizations. Only partially excavated up to the present, it may yet yield the key to many archaeological problems



The oldest of Monte Alban's five cultures is that of the 'Dancers', the name popularly given to a row of bas-reliefs with curiously negroid features



A funerary urn, characteristic of the Zapotec and Mixtec cultures, depicting a priest squatting in reverential posture with a bead necklace, ear-plugs and a head-dress embodying a mask of the deity which he serves



Carvings on the pyramid of Xochicalco in Morelos show marked Maya influence. In between the coils of Plumed Serpents (above) are depicted priests or worshippers (below) with their legs crossed, their faces averted in profile and high, elaborate head-dresses





The most enduring monument of the Totonac culture is the pyramid of El Tajin near Papantla with its 365 niches in seven tiers which clearly reflect the Indian obsession with time

hangs loosely at their side, the other is drawn across the body, the fingers up-raised in a delicate, almost precious gesture. These figures, which are closely akin to Maya art, are strangely Asiatic in feeling.

Xochicalco, one feels, must once have stood at an important junction of trade routes. There are still many mounds to be excavated, grass-grown and starred with delicate-veined fritillaries. All around is the blue and green basin of Morelos, closed off to the north by a mountain wall and to the south by ranges which mark the border with Guerrero, beyond which the mind travels to Oaxaca, Tabasco, Yucatan.

Which exerted the determining influence upon the other, the civilization of the Mayas or that of the Valley of Mexico? The answer to this question would virtually solve the Toltec mystery. Some

archaeologists such as Joyce and Spinden believe the Maya, others such as Gamio the Toltec, to be the older. The original home of the Maya peoples seems to have been in the neighbourhood of the River Panuco near the modern city of Tampico. From there they moved southwards down the coast of the Gulf of Mexico towards their present habitat, leaving in the state of Vera Cruz two branches of the family, the Huastecas and Totonacs who speak languages related to the Maya.

No important archaeological site has been discovered in Huasteca territory, but the Totonac is one of the more important subsidiary cultures of Mexico. Near Papantla in the heart of the Totonac country is one of the most remarkable pyramids of Mexico, that of El Tajin, which clearly reflects the Indian obsession with time. In addition to four sides, it has seven tiers and 365 niches which no doubt once



A ruined city hidden beneath the tropical vegetation of the Tajin site has yielded carvings with a mixture of Maya and Aztec motives, and may well conceal some Mexican 'Rosetta stone'

contained idols. Other pyramids on the same site have as yet been excavated only partially or not at all, and reveal carving of remarkable skill in which the mingling of Maya and Mexican motives is particularly striking.

The Toltecs had two distinct migration myths which their Aztec successors preserved and chronicled. According to one of these they, too, came from the Panuco valley on the Gulf coast; according to the other they came not from the north-east but from the north-west. These two myths are not necessarily so mutually exclusive as might appear at first sight. The Toltecs talked a Nahua and not a Maya language, and all the successive invasions of Mexico by uncultured Nahua hunting-tribes, such as the Aztecs themselves, came from the north-west. It is possible that one of these invasions infused new life into the original Archaic civilization, and that a Totonac infiltration from the north-east gave to this amalgam some of the more highly

developed culture which thereafter developed into that of the Mayas. If this was the case, then, as Mr Robert Marett puts it, 'the Archaic culture was the soil, the Nahua the fertilizer, and the Totonac the seed', yielding the rich harvest of the Toltec civilization.

All this, naturally, is pure speculation. Some day archaeology may yield the vital clue to the mystery. The surface of Mexico, relatively speaking, has been no more than scratched. Three hundred archaeological sites, it has been estimated, are discovered on an average every year, but natural difficulties and expense prevent more than a small proportion of them from being explored. Any one of them may conceal some Mexican 'Rosetta stone', in the form, for instance, of a burial containing contemporary objects from different parallel cultures, which will solve the riddle and allow all these interconnected civilizations to fall neatly into their true chronological order.

In Famous Gardens. IV

Gardens of Japan



Axel von Graefe

In Vanished Poms of Yesterday Lord Frederic Hamilton quotes the reply of a Japanese gentleman to his comment on the absence of flowers in Japanese gardens: "Our gardens, Sir, are not intended to inspire hilaritee, but rather to create a gentle melancholee". The association of many famous Japanese gardens with temples, shrines and mausoleums is thus a natural one; and to these several of the following examples relate. (Above) Beside the Lake of Chuzenji. Torii or honorific archways are often found at the entrance to temple gardens, sometimes arranged in succession to form an avenue



Paul Popper

(Above) One of the most revered objects in Japan is the 13th-century Daibutsu or Big Buddha at Kamakura, approached by flights of steps in a formal garden and framed with pine-trees. (Below) The garden of the Kinkakuji (Golden Pavilion) at Kyoto is secular in origin, being associated with the palace of the Ashikaga Shoguns who flourished in the 14th and 15th centuries. The Pavilion itself is a representative feature: in such buildings the ancient tea-drinking ceremony is performed

E. H. Cassidy



The Tokugawa Shoguns built the temples at Nikko in the 18th century. Near them the garden surrounding the mausoleum of the Shogun Iyemitsu displays a decorative roof over a well for the ceremonial ablutions of worshippers and a conventional stone lantern

These stone lanterns (toro) are a very common ornament of Japanese gardens and their design varies greatly: the elaborate type shown above is more usual than the simple and striking form seen below, which adorns the garden of a park at Kanazawa



E. H. Castidy

Axel von Graefe





Black Star

E. H. Cassidy



By way of compensation for the absence of other flowers, use is made in Japanese gardens of flowering trees and shrubs: azaleas, camellias and (most famous of all) prolifically blossoming cherries

Japanese garden designers excel in the disposal of lakes and pools to vary the prospect, with stepping-stones and wooden bridges—usually curved, sometimes coloured red—from one part to another. (The real lanterns, of wood and oiled paper, are the prototypes of the toro on the preceding page)

Lorenz Saladin's Last Journey

The ascent of Khan Tengri in the Tien Shan

by ANNEMARIE CLARK-SCHWARZENBACH

Heroes of the past are often divested by later generations of their local labels and promoted to the select group of those whose achievements are acclaimed by humanity at large. Contemporary heroes, however, have a habit of being national; and unless he can get the backing of a single nation, your heroic soul is apt to vanish into oblivion. Lorenz Saladin, as this story shows, was something of a hero, but it would take a less nationalistic age than our own to give so unattached a being his due

At the end of September 1936 a short telegram reached Zürich (Switzerland) announcing that Lorenz Saladin, during or after an ascent of 'Khan Tengri' in Russian Tien Shan, near the Chinese frontier, had met with an accident and lost his life. The telegram had been sent by the Moscow correspondent of a little Communist newspaper in Switzerland, *Die Freiheit*, and aroused considerable attention. Saladin's name had become famous far beyond the borders of his Swiss homeland owing to the ascents he had made in the Caucasus in the course of his two consecutive expeditions of 1933 and 1934, and owing to his successful part in the Russian Pamir Expedition of 1935. The news of his death caused a sensation, in spite of the facts that few people had even known that he had returned in 1936 to Turkestan, and that Saladin, although famous, had never been really popular in his native country.

He was an 'adventurer'—a peasant's son, who, born in 1896 in the village of Nuglar in the Canton of Solothurn, had ran away from home as a small boy, and, in spite of poverty, had never endured for long in any trade or profession. For years he had wandered around in the Pyrenees, in South America, in the United States: he had been a dish-washer, swimming instructor, mechanic, policeman—in short, he had raced through the career of good-for-nothing and candidate for the status of American which tradition has rendered almost respectable; but without

becoming a millionaire or anything of that kind.

The only thing that distinguished him from his companions in vagabondage was his passion for mountains. This passion gave meaning to his life; its practical aim can scarcely be accorded name or value, but it remains, as we know, one of the most deeply implanted driving forces of mankind, to which we owe the accomplishment of many truly great deeds.

Saladin was an absolutely simple fellow. While he was clambering about in South America in the Andes, or was (in his own words) "doing some fine climbs" in North America, it scarcely occurred to him that he might become famous just by being a





Photographs by Lorenz Saladin

Market day in Karakol, a 'garden city' of Kirghizia, 5800 feet above sea-level and situated among orchards. Here pack horses were hired for the journey to Khan Tengri, 146 miles away

master of the alpinist's *métier*. He published in the *Alpine Journal* of May 1935 a report on the Caucasus expeditions which he had carried out with some Swiss comrades; from the Pamir Expedition he brought back a meagre diary and a number of really excellent Leica photographs. His name was now known. But he still had no idea of making a career for himself. When, in June 1936, he went back to Moscow, with the intention of climbing Mustagh Ata in the Pamirs or Khan Tengri in the Tien Shan, he was merely following a suggestion made by Sven Hedin, the Swedish explorer, and then only because they happened to be two 'fine' and so far unconquered peaks which awoke his mountaineer's ambition.

The fact that this expedition was to be carried out in Russia from Moscow, with Russian colleagues, and that Saladin, thanks to his earlier feats, was on the best

possible terms with Russian mountaineers, may be partly to blame for so comparatively little being said elsewhere about his ascent of Khan Tengri. The announcement of his death from Moscow may have increased the sensation it caused, but made the possibility of ever learning more exact details appear distinctly less. In Switzerland a few sketchy reports were published without even an attempt being made to rescue the material which Saladin left behind him. So it was that one of the really great mountaineering feats of the world was scarcely heard of, and might almost have passed into oblivion while Saladin was being mourned as a hero in Moscow.

By chance I heard Saladin's story—or at least the little that was known of it—eight months later, in May 1937, in Zürich. I came into touch with his brother Peter, a taxi driver, who gave me 'Lenzli's' last

letters and one from his friend, Gog Harlampiev, from Moscow, to read. As Peter himself could not take leave and had no money, he was very anxious that someone should go to Russia and fetch the belongings which Saladin had left. So I was given the necessary authority by him, secured a visa on the way through Berlin and went via Tallinn and Leningrad to Moscow.

I there met first of all Gog Harlampiev, a young student of music and Saladin's best friend. He had not, however, taken part in the Khan Tengri Expedition, but had only flown, on receiving the first telegram, to Alma Ata, and taken charge of all Saladin's film material. Through Harlampiev I met Saladin's companions. One of them, Vitaly Abolakov, told me the story of the tragic expedition and gave me exact information to accompany the photographs.

These photographs (of which only a few can be included here) form a really valuable record—valuable since the scene of this mountaineering drama, the Tien Shan, is a little-known region; most of its peaks are still unnamed; high passes separate it from China and from the inhabited parts of Kirghizia; strict frontier control had up to then made it impossible for explorers and mountain climbers to penetrate into it, to take photographs or to carry out ascents. Saladin himself had not secured permission to enter this strategic zone without difficulty. When he learnt in Moscow that the Chinese authorities absolutely refused him admittance to Chinese Turkestan, he gave up his first plan, to climb Mustagh Ata, a peak on Chinese territory, and bent all his energies on securing a permit to enter Russian Tien Shan. He received a tourist visa valid for the whole of the Soviet



The first part of the journey, through a pleasant mountain region, whose green pastures and abundant streams afforded ideal camping-grounds, was the easiest. Preparing a meal in brilliant August sunshine



Kirghiz nomads, grazing their herds during summer on the serts (Alpine meadows) of the Terskei-Alatau range, were frequently met. A Kirghiz with his large family of five wives and their children

Union; the 'Central Office of the Trade Unions' gave the money, about 15,000 roubles, required by him and his four Russian companions; and the expedition seemed assured.

SALADIN AND THE SOVIET

Saladin had left Switzerland with the most modest equipment imaginable—a rucksack, a Leica and another film camera. Incidentally, he had not paid for this film camera, and his brother Peter had given his guarantee for it. When it became known later that Saladin had received money from the Russians, the rumour immediately went round that he had 'sold himself' to the Soviet Government: presumably, it was said, he had promised as a *quid pro quo* to make strategic observations on the Chinese frontier, and in any case to hand over his entire photographic material on his return.

To be sure, the Tien Shan is a district of great strategic importance, and certainly significance still attaches to those 'southern routes to India', lying further south in the Pamirs, for which search was made even before the World War. But Saladin the Swiss was just as certainly not the right person to secure useful information of this kind, to draw maps, and do all the various other things necessary. He never even succeeded in keeping a diary as almost all mountaineers do, and the scenes of a large number of his photographs could not be located on account of inadequate data. His notes cease at August 17, 1936. That was the day on which he and his four companions set out from Karakol for the Khan Tengri.

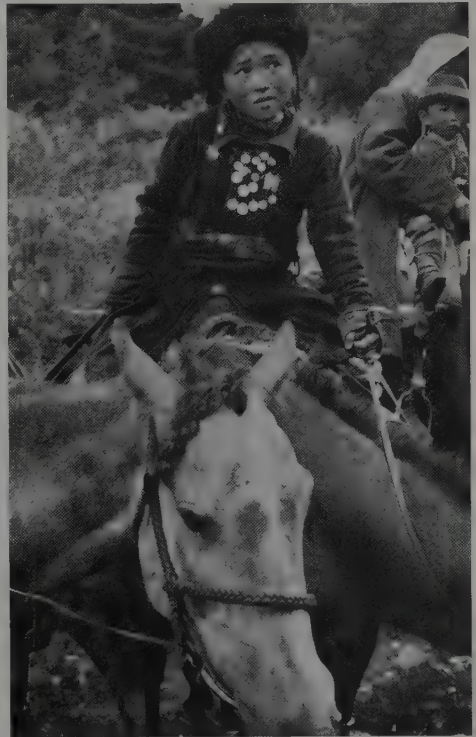
Incidentally, we know that the Russian Government is very keen about sporting achievements, and disburses large sums for expeditions, even when they have

no immediate practical object. Saladin's friends, Leoni Guttman, Misha Dadiomov, Evgeny and Vitaly Abolakov, rank as the best mountaineers of the Soviet Union: Saladin himself had made his name on the Pamir Expedition of 1935, and was unusually popular with his Russian comrades. It is, therefore, not so surprising that the necessary money should have been made available for the ascent of Khan Tengri. Even more than this was done: Saladin was insured by the Central Office of the Trade Unions for 10,000 roubles. This sum is being held in Moscow at the disposal of his family, but it has so far not been possible to send it to Switzerland owing to exchange regulations.

None of Saladin's equipment—with the exception of the two cameras—was bought until he reached Moscow. He enumerates the items: tinned food of all kinds, dried vegetables, *valinki* (felt boots) and clothing for the porters, sleeping-bags, a tent, measuring apparatus, picks and rope—only 450 kilograms in all. On July 2nd Saladin, Leoni Guttman and Evgeny Abolakov left Moscow and travelled via Tashkent to the Tamingen district in the Turkestan range, which they had visited the previous year in company with a group of scientists, principally geologists, who had been searching for samples of rock and, in particular, for veins of ore. The geologists had established a permanent camp in the Tamingen and were continuing their work.

Saladin and his friends carried out various ascents in this district and on July 27, leaving the Turkestan mountains, made their way to Frunze, the terminus of their railway journey. There they met Misha Dadiomov and Evgeny's brother, Vitaly, and drove in a lorry via Rebatchi, along the shore of Lake Issyk Kul, to Karakol, which they finally reached on August 7, after a very difficult journey owing to the bad roads. A thermometer and an altimeter arrived broken—a loss which of course could not be made good.

Karakol is a 'garden city', situated 5800 feet above sea-level, with a mild climate, surrounded by orchards and melon and poppy fields. Saladin visited the weekly market next morning, and recounts with delight all there was to buy: raspberries, bilberries, apples, pears, radishes, turnips, butter, milk, cheese. . . . The time of the year was favourable not only for the fruit market, but for the start of the ascent of Khan Tengri as well. But when Saladin went with his friends to the frontier authorities, in order to have their passports visa-ed, he, the foreigner of the party, was flatly refused entry into the Tien Shan. It was pointed out that his tourist visa was not valid for the



Among the Kirghiz everybody rides—old and young, mothers and infants; and 'the little girls, silver ornaments round their necks, sitting securely and gracefully in the saddle... look like princesses'

frontier district, and that so far no foreigner had ever received this favour. Saladin and his friends began wiring to Moscow, until the total number of telegrams mounted up to fourteen; one of them was addressed personally to Joseph Stalin. Soviet Russian bureaucracy works slowly. The days went by, the season advanced—even Saladin, tough and obstinate though he was, became nervous. Release came with a telegram from Moscow which arrived on August 17; Lorenz Saladin, the only foreigner to do so, received a permit to enter the Tien Shan.

THE ROAD TO KHAN TENGRI

From this moment he made no further notes, wrote no more letters, had no other thought in his head but to reach Khan Tengri. Saladin's last letter, from Karakol, is dated August 17. "Today we are setting out," he writes, "five climbers and three Kirghizians, who are staying behind with the horses. I shall be in Zürich about October 3rd. The report on Khan Tengri will follow after our return to Karakol. . . ."

In actual fact the little expedition did not set out until two days later, on August 19, after all preparations had been carefully made. Compared with the apparatus and equipment of a Mount Everest expedition, these preparations sound more like those for a harmless week-end excursion. Saladin and his four Russian companions had to be content with the simplest of equipment, and to rely on their own intuition and mountaineering experience. Even the route of their approach to Khan Tengri was known only in its broad outlines. From Karakol they wanted to cross the Terskei-Alatau range in a south-easterly direction over two 13,000-ft passes in order to reach the Sari Djas valley. The Sari Djas flows into the Innültchek river, which they were to follow up in a north-easterly direction as far as the Innültchek glacier. This stretch is about 100 miles long. Then follows the

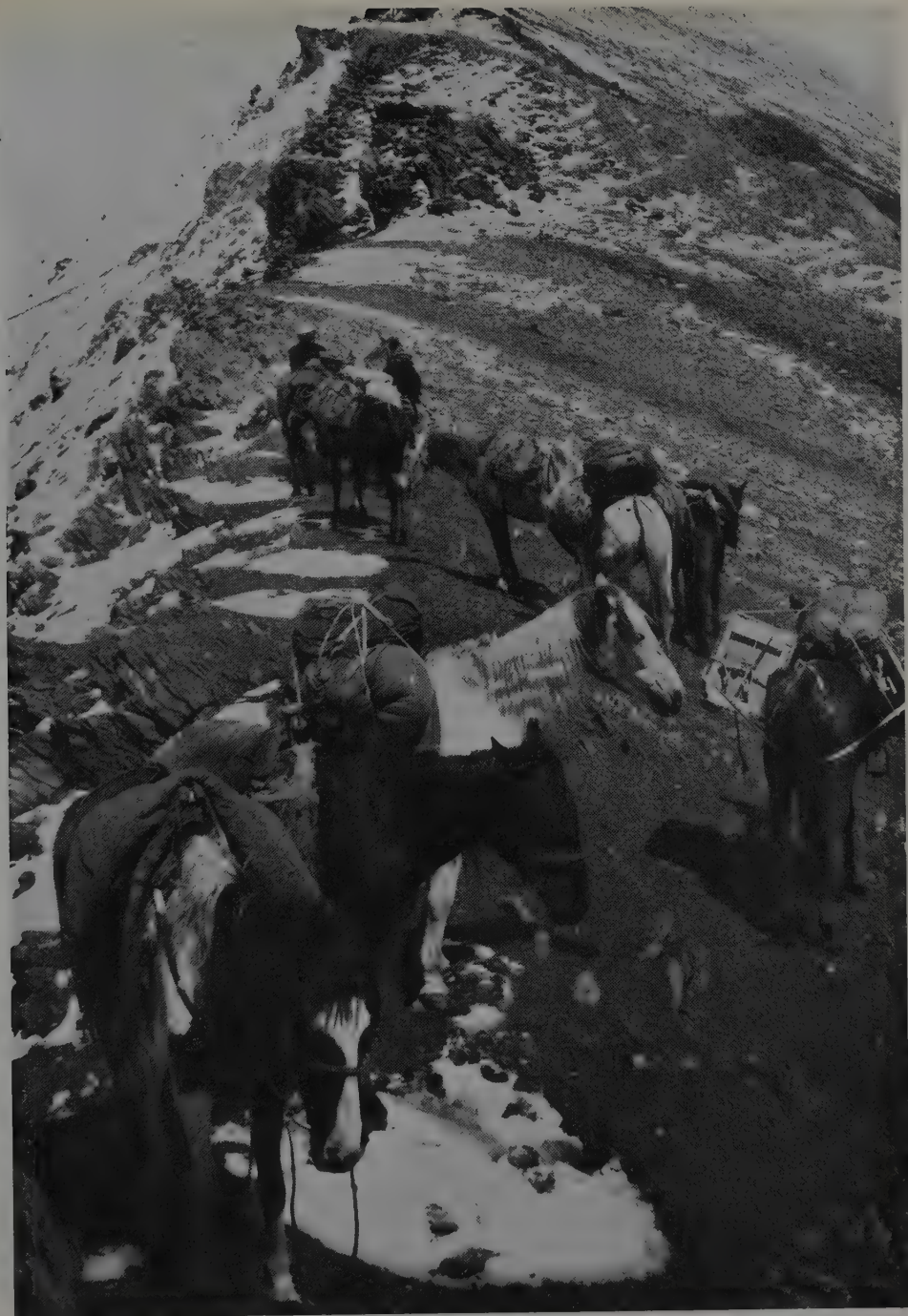
march over the glacier, which, 46 miles long, ends at the foot of Khan Tengri.

Their rations were apportioned as follows: for the journey from Karakol to the Innültchek glacier, 2 kilograms per man per day, of rice, barley, macaroni, tinned milk, with a sheep for fresh meat; tea and bread. For the march across the glacier, 1½ kilograms per man per day, of tea, dry bread, tinned milk, cocoa, cheese, sausage and groats. For the actual ascent (on which they wanted to establish only one single camp at about 20,000 feet!), 1 kilogram per man per day, of dry bread, nuts, dried fruit, chocolate, tinned milk, tinned meat, semolina, and egg powder. They were to take also a Primus stove with Meta solid fuel.

Ten horses with three Kirghizians were hired for transporting the baggage, and at nine o'clock on the morning of August 19 the little caravan left Karakol. The actual ascent of Khan Tengri is a mountaineering feat which it is not easy to appreciate properly. Apart from the very considerable height (the summit is 23,600 feet high) and from fatigue caused by the thin air, it seems not to be a particularly difficult mountain as far as climbing is concerned. Nevertheless this ascent must rouse the admiration of every mountaineer.

When in Switzerland a few sensation-loving or careless and ambitious young people climb the Eiger Wall, it constitutes first a suicidal and secondly, at best, an acrobatic undertaking. Experienced Swiss guides shake their heads over it, every one wonders at the way they risk their lives time and again to save people so often warned. Then again, doctors and nurses, hospitals and hotels, are at their disposal.

Saladin, Dadiomov, Guttmann and the two Abolakovs on the other hand went alone; they could hope for no help, and even their trek to Khan Tengri represented a feat of endurance which would have shattered the enthusiasm of many young



A pass (13,000 feet) across the Terskei-Alatau range, difficult even for tough little Kirghiz horses



The Innültchek Valley with Petrowskowa, one of the few peaks to have a name in this formidable natural frontier region between Russian and Chinese Turkestan. Here human habitation ends

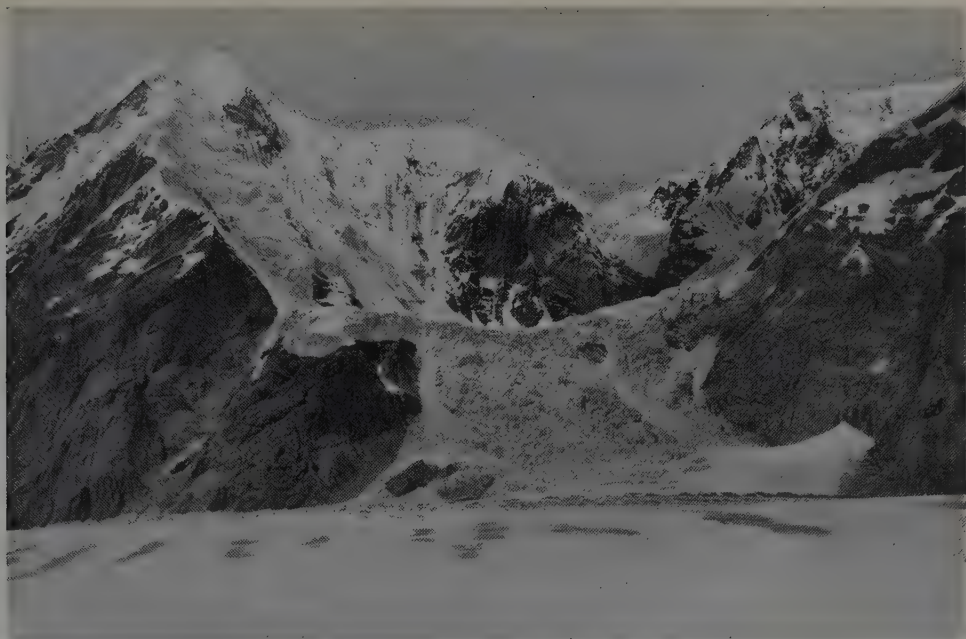
aspirants to the ascent of the Eiger North Wall. A 100-mile journey to the Innültchek glacier and 46 miles over the glacier: to cover this distance of 146 miles they took ten days, which in itself was a very considerable achievement.

The first part of the way was the easiest. The Terskei-Alatau range, which was crossed, had ample water and green pasture; they met everywhere Kirghiz nomads who with their herds were spending the summer months on their *serts*, as they call the Alpine meadows. Saladin took some charming photographs of these nomads—the last outpost at the border of the inhabited world. The women are unveiled, like the women of all nomad tribes; a man has three or more wives, who all live together with a host of children in one of the yurts, which are solidly built and give good protection from heat and cold.

Horses are the most precious possession

—little, tough animals with thick manes, sure-footed, pony-like. Children and old people, mothers and infants, all ride, and the little girls, silver ornaments round their necks, sitting securely and gracefully in the saddle dressed in their long sheepskin coats, look like princesses. They had never yet seen any other human beings than the members of their tribe, and the five climbers with their pack-horses and strange baggage aroused delighted curiosity. They were offered *koumiss*, sour milk, the nomads' chief food. Mares' milk, incidentally, is also drunk.

Then followed the steep descent of the Tjus Pass and the Sari Djas valley, the passage of the Sari Djas river, and the way through the Innültchek valley to the glacier. Here human habitation ends. The frontier region between Russia and China, between Russian and Chinese Turkestan, seems to have been designed by



Nourished by minor glaciers, the Innültchek glacier, one of the three largest in Central Asia, confronted Saladin and his companions with 46 miles of difficult going to the foot of Khan Tengri



One horse broke through into a crevasse but was recovered uninjured after some hours of work



During the ascent the party sheltered at night, protected by their own warmth, in snow-hole bivouacs just large enough to take one man's body. The last bivouac 600 ft below the summit

nature for its purpose. On the glacier the Kirghiz pack-horses proved their worth; one of the ponies broke through into a crevasse, but was recovered quite uninjured.

Horses and porters had at last to be sent back; the base camp—a single little tent—was established at the foot of Khan Tengri, on the snow surface of the glacier. At ten o'clock on the night of August 30, in calm weather, the ascent was begun. Saladin and his friends at first followed a chimney which led to the western ridge of the Khan Tengri pyramid. At 18,700 feet they established their first bivouac. As they had not taken the tent with them, they used a primitive method which had already been tried out by Saladin in the Caucasus: they dug holes in the snow which were just large enough to take the body like an icy coffin, and they were sufficiently protected in this way by their own warmth. The weather had changed: a heavy storm, the first they met,

forced the five men to hold out two days in this, their very first camp, before they could continue the ascent up the western ridge. Further bivouacs followed at 20,300 feet and 22,000 feet; the last, at 23,000 feet, was only 600 feet below the summit. This last stage, the exceptionally steep summit wall, was overcome on September 5.

The photographs which Saladin took during their short rest show clearly that the weather was calm up there, and visibility good, while lower down heavy banks of clouds were already forming. Reason enough for anxiety. After a respite of only 40 minutes, therefore, the descent was begun, and the so-called third camp at 22,000 feet was reached on the same day. Next morning, on December 6, the descent as far as the first camp at the end of the western ridge was to have been continued.

The climbers had now entered a zone of fierce storm. Snow was falling; con-

sequently, visibility was bad; and bitter cold taxed their strength to the utmost. On this day an incident, which at first appeared trivial, gave a tragic turn to the hitherto fortunate course of the expedition. During a short rest a rucksack was blown over the edge of the ridge. Guttman, trying to stop it, lost his balance and slid about 600 feet down. Saladin succeeded in climbing down to the scene of the accident and in carrying back his half-conscious comrade on his shoulder as far as immediately below the first camp—an immense effort which exhausted the last of his strength.

DEATH OF A HERO

Further progress during the storm, in falling darkness, was out of the question. In that frightful cold the friends spent the night in their snow-holes; the ice melted under their warm bodies, so that they were lying in water. Their hands and feet were all badly frozen; Saladin attempted to scratch off the frost-bitten places on the backs of his hands with his pocket-knife, and plunged his hands in petrol to disinfect them. In so doing he seems to have poisoned himself, although the effects did not appear until a few days later.

The five men finally reached the base camp and struggled on over the Innültchek glacier, in the hope that they would soon meet the porters and horses which, according to arrangement, should have been coming towards them. They also sent a radiotelegram at once to Alma Ata, which was transmitted to Moscow, but did not arrive there until September 17. The Kirghizian Government itself immediately equipped a rescue party, and sent an aeroplane over the Terskei-Alatau range which dropped a message to the sufferers that help was already on the

way. In the meantime they had met their porters and were slowly continuing their march.

On September 9 Saladin admitted for the first time that he was feeling ill. He begged the others to go on without him, but his friends packed him in a sleeping-bag and fastened him to his horse. So it was he died, on September 14. One of his comrades remarked that Saladin had lost a glove, and asked whether he could help him. "I don't understand", he answered: at the same moment he collapsed onto the neck of his horse. On the evening of the same day the four completely exhausted Russians met the rescue party from Alma Ata. They brought the body of Lorenz Saladin as far as the end of the Innültchek valley and buried it at the junction of the Innültchek and Sari Djas rivers under a group of fir trees.

A few days later they were picked up by an aeroplane and flown to Alma Ata. All of them recovered completely except young Evgeny Abolakov, half of whose fingers and toes had to be amputated. But even he has remained true to his passion and last summer, when he could still scarcely walk, occupied a post as teacher of theory in a mountaineering school in the Caucasus. His brother Vitaly, and Dadiomov, Guttman and Gog Harlampiev intend to attempt the ascent of Mustagh Ata—that second giant of the Chinese-Russian border which Lorenz Saladin had in mind. When Vitaly told me of this plan in Moscow, I noticed that he and his friends felt themselves to be the executors of a testament. They put it in these simple words: "If Lenz were still alive, *he* would have been sure to climb Mustagh Ata. We in the Soviet Union will not forget Lenz. He was the best of our comrades."

Germany's Former Colonies

Previous articles in this series have dealt with the former German colonies in Africa and New Guinea. Dr Keesing, author of Modern Samoa and other works, is now Professor of Anthropology in the University of Hawaii. Educated in New Zealand, he has engaged in extensive research into native problems in the Pacific area, and is therefore particularly well qualified to appreciate the respective standpoints of governors and governed in New Zealand's Mandated Territory of Samoa

IV. Western Samoa and Nauru

by FELIX M. KEESING

THE smaller Pacific islands have been the scene of international rivalries seemingly quite out of proportion to their size, and none more so than the Samoan archipelago. There, as everyone familiar with Robert Louis Stevenson's *Footnote to History* will recall, Great Britain, Germany and the United States were for decades at loggerheads, especially being entangled in native factional struggles centring around a European-sponsored 'kingship'. Apart from guarding the interests of their nationals and protecting the natives from exploitation by their nationals, the special objective was control of two of the most strategically important harbours of the South Seas.

ATTEMPTS of the three powers to establish joint control, in particular through the 1889 'Treaty of Berlin', failed miserably. In 1900, therefore, Great Britain withdrew from Samoa in consideration of imperial concessions elsewhere, leaving Germany and the United States to divide the group. The Americans took over the four small eastern islands which had only one-sixteenth of the land area and one-sixth of the native population, but included the splendid harbour of Pago Pago, now a naval station. Germany obtained control over the western portion comprising the two large islands with some small out-

Germany's
Fourteen
Years



Stanford, London.



Samoans from an outlying village arrive in their longboat (shaped like a greatly elongated whaling boat) to trade in Apia. On a hill behind its curving bay Robert Louis Stevenson lies buried

liers, the less-sheltered harbour of Apia, around which practically all European enterprises were concentrated, the great majority of the Samoan people, and a heritage of turbulent Samoan politics. It was these western islands which, on August 29, 1914, were occupied peaceably by an expeditionary force from New Zealand, and later became the 'Mandated Territory of Western Samoa' held in trusteeship as a 'C' class mandate by that Dominion.

WESTERN SAMOA lies centrally in the Pacific Ocean some fourteen degrees south of the equator, and has a land area of about 1130 square miles.

New Zealand succeeds Germany Upolu and Savai'i, the two large islands, are mountainous and verdant, with slopes suited to the growing of the standard products of tropical agriculture. There is a wet and a dry season, and the islands though outside the hurricane belt proper are subject to bad 'blows'. Apart from American Samoa the immediately

neighbouring island groups are all under British control or influence: the Crown colonies of Fiji and the Gilbert and Ellice islands, the Tonga protectorate, and the Cook, Manihiki and Tokelau groups which are part of the New Zealand 'sub-empire'. Long before the Mother Country withdrew from Samoa, the New Zealand authorities had made strong efforts to have British sovereignty established there, so that the ousting of Germany represented fulfilment of an old hope.

The native Samoans are brown-skinned Polynesians: that is, they are one subgroup of the viking-like people who about the beginning of the Christian era pointed their canoes out from Malaysia into the wider Pacific and in the course of epic voyagings settled the great 'triangle' of islands from Hawaii in the north to New Zealand in the south and away eastward to Easter Island. When whites arrived there were about 46,000 of them in what is now Western Samoa. By 1881 their numbers had fallen away to about 28,000.

The end of the German era saw an increase to about 33,600, and thanks particularly to intensive health work the 1936 census showed a further rise to 52,000.

The white population, on the increase until shortly after the war (381 in 1903, 544 in 1913, 835 in 1921), has fallen away in recent years so that in 1936 there were only 367; the precariousness of plantation enterprises, and the employment of educated Samoans and persons of mixed descent in Government and commercial posts has apparently 'ended the day of the white man in the islands', except in certain responsible positions. Meantime the mixed population is increasing rapidly. Those counted as of 'European' status

(i.e. legitimate or legitimized descendants of whites) alone total nearly 3000, and where to fit them into the economic and social scheme is one of the outstanding problems of the future.

Of the 331 Germans in the territory in 1913, most were deported or moved out voluntarily, and the hundred or so adults counted 'German' today are largely of mixed descent. Some 260 Chinese and 80 Melanesians form the remnant of a labour force of many hundreds brought in by the German and earlier New Zealand Governments. The Dominion Labour Government, long critical of even a liberal contract labour system, is contemplating repatriation of the rest of the Chinese, to the great alarm of the planters.



Felix M. Keesing

A 'talking chief', to whose oratorical capacity Samoan tradition attaches great prestige, in ceremonial dress, which includes a kilt of native cloth, a fly-whisk and an orator's staff

NEARLY all Samoans continue to live in their ancestral villages scattered around the coastline, and their old 'fish-and-taro' economy is largely intact.

For certain essentials like matches and kerosene, and less regularly for luxuries such as canned foods, also when church collections and Government taxes are in the offing, they prepare copra and take it to the trading-store. The villages more accessible to Apia likewise grow bananas for export to New Zealand under a Government scheme, and make curios for the tourist trade. Apart from this, decades of enthusiastic Government effort have failed to interest more than a handful of Samoans in commercial production or in regular labour for wages on the European plantations. Because of laws forbidding alienation of native land and making leaseholds difficult, also because of problems of communication, European plantation enterprises have been confined almost exclusively to the slopes around Apia which passed into the hands of whites in early days. Nearly all the copra, cacao and rubber plantations of today were developed by the Germans, and in 1913 exports were worth somewhat over £260,000. The

Planters
at a
Discount

post-war boom more than doubled this figure, but the recent depression brought exports down to less than half of it. In 1936 the total was back to £263,000, of which 60% represented copra, 17·8% bananas, 17·7 cocoa-beans and 1·3% rubber.

Apart from the regular sale of bananas on a quota system to New Zealand (and of the quota 75% is always allotted to native growers, so that it does not count importantly in the European plantation economy), Samoan commerce leans precariously on world markets in which its products reap uncertain profits because of small-scale operations and high costs of labour and transportation. Some observers think that the day of the white planter in Samoa is about ended, and at least there seems no prospect of any elaborate expansion. Nevertheless, since all the German properties were awarded to New Zealand by the Versailles Treaty as her share in war reparations, it has been in the interests of the Dominion Government to carry these along, partly through leasing to private individuals and partly through a large enterprise known as the 'War Reparations Estates'. In the longer perspective, the planter group in Samoa may be dominantly the local part-Samoans, though so far they have shown little interest in a recent official scheme to settle them on the land.

IN 1913 about half the exports went to Germany, 40% to New Zealand and Australia and 5% to the United States.

Samoa's Trade Relations

In 1936, by comparison, nearly 25% of the exports went to the United Kingdom, 21·5% to New Zealand, nearly 4% to the United States and 34·5% to the 'Continent of Europe (exact destination unknown)', of which last doubtless much goes to Germany. For its imports, Western Samoa, even in the German period, leant heavily upon the nearby British Dominions; in 1913 only 15% were

recorded as from Germany, while Australia and New Zealand provided 60%—though some of the latter may have originated in Germany. In 1936, New Zealand supplied 32%, the United Kingdom nearly 20%, Australia 16%, Japan somewhat over 10%, the United States 7% and Germany merely a negligible quantity of minor manufactured goods. While, of course, the geographical bond between New Zealand and Samoa is not so important in these days of quick transport, it nevertheless seems a fact that there is a natural trade reciprocity at least in food-stuffs between the two countries, one temperate and the other tropical.

GERMAN native policy in Samoa, as worked out by two well-known colonial administrators (Dr Solf, Governor until

Relaxing the Firm Hand

1910, and Dr Schultz, following him in the position), combined firmness with a remarkable grasp of the Samoan mind and social system. The controversial 'king' position was abolished, and a structure of native officialdom was built up based largely on the traditional Samoan leadership. Even so, two native outbreaks had to be quashed: troubles that were paralleled on a smaller scale in American Samoa under navy control. In 1920, the New Zealand Government, anxious to make a model territory of its mandate and confident with the experience of handling a related Polynesian people, the Maoris in the Dominion itself, launched a policy which had as its broad objective making over the native life along lines which that democratic-socialistic country had come to count as desirable. A slogan, 'Samoa for the Samoans', found expression in various official measures which the local Europeans considered neglectful of, or injurious to trade and plantation interests. Changes in native custom, some of which might have required a century or two to accomplish, were written into law; an aristocratic native polity was given at



Felix M. Keesing

Felix M. Keesing

Inland villages are infrequent: the groups of houses, like brown beehives on stilts, nestle in bays along the reef-fringed shore, half-hidden in coconut groves

Built without walls, the houses typify the easy pattern of Samoan native life, which is communal in the extreme and difficult of adjustment to the demands of individual economic effort imposed by white civilization



least a semblance of democracy; and at the same time the firm hand of former days that held in check disruptive influences was relaxed.

AN UPSURGE of Samoan discontent and disturbance came at the very time (1926) that many of the local Europeans were

A Heritage of Trouble

organizing against the official measures. The two anti-administration groups, already linked considerably by ties of blood and marriage (though living in two legally different worlds, 'Samoan' and 'European'), joined forces—thus the so-called *Mau* came into being. Ten strained years ensued, marked by non-co-operation on the part of a majority of Samoans, factional struggles that largely rooted back into the old polity suppressed by the Germans, a more or less articulate movement for self-determination, official restrictions akin to martial law, deportation of a prominent part-Samoan leader, imprisonments, one serious clash in which blood was spilled, and reverberations of these happenings variously back and forth between Apia, Wellington, London and Geneva. Not a few New Zealanders became so dubious of their Government's ability to handle the situation that they advocated transferring the mandate to the more experienced British Colonial Office.

The Labour Government, soon after its accession to power in 1936, made moves of conciliation to the anti-administration groups. It withdrew restrictive measures and held a new election through which the native Advisory Council became almost entirely *Mau*. Since that time, they have kept to a policy which proved very effective in relations with the Maori, namely of 'purposeful inactivity'. Samoa has become, at least outwardly, calm again, though many local residents and observers feel that the political pot is 'bubbling hard, ready to boil over again' unless something definite is done as regards an accumulating set of requests by Samoans and Euro-

peans that are tending to become demands. It seems that, just as the three great powers could not avoid getting embroiled in native struggles of the last century, so still any country, New Zealand or otherwise, governing Samoa is in for a difficult time for years to come.

NAURU, smallest of mandated territories, is rich in mineral wealth. The mandate, conferred on His Britannic Majesty, is

A Joint Mandate

exercised in accordance with an agreement made between the Governments of Great Britain, Australia and New Zealand. For the present it is administered by Australia. Situated almost on the equator between the Gilbert and Ellice Colony and the Japanese mandated islands, Nauru is less than 9 square miles in extent. Its native population of about 1700 brown-skinned Micronesians, today on the increase after an earlier decline, live on the coast, and the whole centre of the island is high-grade phosphate rock. Of 'marine sedimentary origin', the deposit totals perhaps a hundred million tons.

Nauru was annexed by Germany in 1888 and administered as part of the Marshall Islands protectorate. Eleven years later the phosphate was discovered. A British company operating on nearby Ocean Island in the Gilberts secured the right to exploit it by admitting German interests as shareholders and taking Germans onto its staff. Operations started in 1906 and in the immediate pre-war years the annual output averaged about 126,000 tons. In 1912, a sample year, Australia and New Zealand took more than 38% of this, Germany 31% and Japan somewhat under 31%. As with Samoa, the British Dominions supplied more than half the imports, though some of these probably originated in Germany; about 23% came direct from Germany.

WHEN war broke out the British staff members submitted to being deported to



By courtesy of the British Phosphate Commissioners

The whole centre of Nauru consists of high-grade phosphate rock, which is extracted under the control of the British Phosphate Commission and transferred aboard ship by ingenious modern machinery

Ocean Island. But the arrival of H.M.A.S. *Melbourne* on September 9, 1914 reversed the position; the British returned and the

Phosphate Island

German staff were removed to Australia for internment.

Once the joint mandate was established the three governments took steps to acquire rights over the phosphate on both Nauru and Ocean Islands by buying out the private interests for £3,500,000. A 'British Phosphate Commission' was formed to carry on operations, and it was agreed that the three governments should have prior rights over the product in proportion to what they contributed towards this sum, namely Great Britain 42%, Australia 42% and New Zealand 16%. In actual practice Australia has been taking nearly three quarters of the output and New Zealand nearly a quarter, while minor quantities have gone to England and Japan. In 1936, just over half a million tons were exported, representing about one-twentieth of the world's phosphate output for the year. The investment of

the three governments bears interest at 6%, and is being amortized over a 50-year period.

Modern machinery is used in ingenious fashion to extract the phosphate and transfer it by way of great loading 'arms' extending 172 feet beyond the reef to the phosphate ships of the Commission as they lie in deep water. Today the non-native population consists of 1260 Chinese and 194 British. The native Nauruans are probably the richest of South Sea islanders; £40 an acre is paid for their lands, followed by 7½d. per ton, of which 4⅔d. goes direct to the owners, 2d. is held in trust for them, and 1½d. is used for the benefit of the people as a whole. Inevitably the traditional native life has been considerably disrupted in the new order, and recently the administration has called upon anthropologists to aid in educational and other planning. An Administrator appointed every five years by the Australian Government supervises native affairs by way of the Nauruan chiefs and councils.

PHOTOGRAPHIC NOTES

Edited by F. S. Smythe

18. CINÉ-PHOTOGRAPHY (5)

In the making of professional films a number of different personalities influence the quality of the final production. The *producer* puts up the money and is naturally guided by what he considers will be public taste at the time of release. The *director* controls the actors and interprets the script on the set. The *cameraman*, under the director, actually photographs the scenes, while the *cutter* (also under the director) edits and finally composes the 'master negative' from which the prints are made.

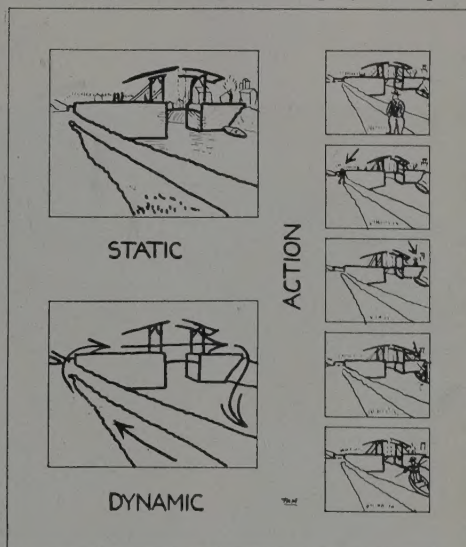
The amateur is his own producer, director, cameraman and cutter. It is, however, as 'director' of his own productions that he will have most amusement from his 'investments' as 'producer' in buying his camera and films.

The work of the director is all-important. No amount of skill in cutting will avail unless the cutter has ample material on which to exert it. The keen amateur ciné-photographer invited to a wedding reception may well offer a 'sub-standard' film of the wedding as a most acceptable present to the bride and groom. In the shooting of such a film as this the amateur ciné-director can interpret, not only the wedding as it occurred, but also the wedding as *he* saw it, and provide himself with a few hundred feet of original and imaginative shots to aid the final work of composition.

By including shots of the town clock, he can indicate the late arrival of the bride. Even if he fails to obtain these shots at the time of the ceremony, it is well worth his while to go to the trouble of making them at a later date. When composing, they could be cut into the film between the arrival of the groom and the arrival of the bride, thus creating a tension in the audience, reflecting the tension suffered by the groom himself.

Few wedding ceremonies go according to plan, and if the amateur ciné-producer can obtain a record of that slip on the part of the bridesmaid or that stumble of the tiny page, he will at once have doubled the value of his picture. Such continuity details as a hand throwing confetti; a pocket being emptied of confetti; and, at the end of the film, a workman striking the marquee after the guests have gone home—these will be of great help to the producer-cameraman when he lays down his camera to become his own cutter and take up the work of composition.

But in composing a picture he should not forget the all-important question of design. In a cinematograph picture, there are three distinct types of design which play their part



Art lovers are familiar with the idea of design in a picture. In a film this 'Static Design' is constantly changing from frame to frame, thus creating through action a 'Dynamic Design' running lengthways along the 'celluloid'—the 'time dimension' of the 'filmic world'.

in creating a pleasing impression when the final production is screened.

The first of these is *static design*. This is the design of the still picture—the design of the picture in each individual 'frame' of the film. An artist might discuss this type of design in reference to his own canvas.

Secondly, there is *dynamic design*, which is the design of the picture in 'filmic time', from frame to frame. The ballet choreographer might speak of this in working out the movements of his dancers on the stage.

And thirdly, there is *dramatic design*, incorporating the emotional pattern in the actual story of the film.

These three forms of design should all be taken into account when shooting the material for even the simplest and most obvious of sequences.

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